Math/CS413 E13/14, MWF 1, 443 Altgeld, Course Organization, Spring 2015

**Instructor:** Prof. Bruce Reznick, 327 Altgeld, 333–4284, reznick@math.uiuc.edu. My phone has voice mail and I frequently check and reply to my email, including weekends. Office hours are by appointment. I take them seriously, and they can usually be arranged within 24 hours. You are also encouraged to ask me questions immediately before or (especially) during class. I enjoy answering questions by email, so that I can post the (anonymized) question and my answer on the webpage (see below) for all to see. This is also a requirement (see below). I’m terrible with names; don’t take it personally.

This course has a webpage:

http://www.math.uiuc.edu/~reznick/math413S15.html

There will be a “class diary” summarizing the class day by day, providing links to handouts, and containing my responses to all questions sent to me by email. I also have an ongoing page of useful mathematical links, to which you are invited to make suggestions:

http://www.math.uiuc.edu/~reznick/S15links.html

**Choices:** This course has two names, Math 413 and CS 413. The only difference is how the course is counted in your program. Most people will take E13 for 3 Course Credits. Others (especially graduate students) may choose to take E14 for 4 Course Credits.

If you choose to take the fourth hour, you will need to come up with a proposal of activities which would add $\frac{1}{3}$ to your effort in the class. Since there will not be a fourth lecture during the week nor a fourth exam, there are basically two choices: either a serious project or more (and harder) homework. Make me an offer. This has to be approved by the Mathematics Undergraduate office in 313 Altgeld in any case.

**Text and Syllabus:** The text is *Introductory Combinatorics* by Richard A. Brualdi. The syllabus instructs me to cover Chapters 1, 2, 3, 5, 6, 7, 8, 10, with the exceptions of 1.2, 1.5, 1.7, 2.6, 5.6, 6.5, 6.6, 8.4, 8.5, and this is my plan. Be aware that (reading, understanding, constructing) proofs are an integral part of this course.

**Homework Policy:** Written homework will be assigned to be due weekly. Please staple or paper-clip your homework sheets (no folding over corners), and consider writing more than one draft. You are expected to spell correctly and write complete, grammatical sentences when possible in this and all your University assignments. Homework solutions will be distributed when the assignment is due. No late homework is accepted, but the lowest two homework scores (possibly zero) will be omitted in computing your homework average. In rare instances, you may be excused from an assignment, but the dropped scores are intended to cover ordinary illnesses, weddings, etc. **Collaboration in studying and working the homework is strongly encouraged! Collaboration without comprehension is a waste of time.** An e-mail list will be distributed once the class stabilizes. It is my policy not to give individual homework help on pending problems. But if you ask a question in class or in email, I can further explain to everybody the underlying mathematics.
**Homework Content:** Most homeworks will be a combination of various types of problems.  
(i) There will be problems from the text with the answer in the back. These will be corrected but will not count in the homework grade. (ii) There may be problems from the text which do not have the answers in the back or easily accessible via google. (iii) There will be old exam questions, marked by the rubric \((E)\). (iv) There will be a few other questions that I just make up.

Many assignments will have a question involving **your** number \(N\). Each student in the class receives a different prime number between 150 and 400. Answer the homework question with this particular value of \(N\). The reason for this is to allow people to work together on problems and yet have different answers.

**YOUR NUMBER IS:**

**Exam Policy:** There will be three Hour Exams, at the usual intervals. Painful recent experiences cause me to remind you that the dates of exams are not subject to individual negotiations. You will need serious documentation in order to qualify for a makeup exam! You will be allowed one hand-written index card (provided by me), but otherwise, the exams will be closed-book and closed-note, and will resemble the homeworks. The Final Exam will be comprehensive, about twice as long as an Hour Exam, and somewhat harder. The Final must be held at the scheduled time: Wednesday, May 13, from 7:00 – 10:00 pm.

**Participation:** A small portion of the grade is the easiest to achieve. I expect you to send me at least three emails during the semester with questions about material from the lectures or the reading from the book (not the homework or exams), and I’d like these at least two weeks apart. The reason is that advanced mathematics students are both somewhat shy and somewhat reluctant to admit publicly when they don’t understand something. Your questions to me will help me explain the material better to the whole class.

**Grading Policy:** Keep in mind that I am grading your work, not you as a person. Each Hour Exam counts 20%, the Final Exam counts 40%, the Homework counts 15% and the Participation counts 5%. The lowest 20% is dropped. (Again, painful recent experiences cause me to state that a missed exam **cannot** be dropped from the computation of the grade.) All grades are numerical. The highest possible grade cutoffs are: A/B – 90%, B/C – 80 %, C/D – 70%, D/F – 60%, by which I mean “A-/B+”, etc. I will try to keep you posted on any curving as the semester progresses. There are two exceptions to the numerical grading: anyone who takes all Hour Exams and scores 96% on the Final gets an A of some kind and anyone who scores 75% on the Final will pass. My experience is that these exceptions rarely make a difference.

**Philosophy:** The purpose of this course is to introduce you to combinatorics, one of the most beautiful parts of mathematics. It will be a privilege and a pleasure for me to spend the semester talking to you about this subject. Education is not a zero-sum game when done correctly. I do not consider you my adversaries, and hope the feeling will be mutual. Become an active participant in this course. Let it get under your skin and visit your dreams. These are serious steps towards becoming a mathematician.