SYLLABUS
MAT 646, SPRING 2010

<u>Instructor</u>: Prof. Mark Watkins
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      <u>Classmeetings</u>: Tuesdays* and Thursdays from 2:00 pm to 3:20 pm.
      <u>Office hours</u>: Mondays, 1:30 pm - 3:00 pm
                     Thursdays, 11:00 am - 12:30 pm
      Also available by appointment.

* We will reschedule the class meeting of 30 March (Tuesday) to a different day at our mutual convenience.

<u>Prerequisites</u>: (1) A knowledge of linear algebra equivalent to MAT 531 (vector spaces, bases, dimension, orthogonality, etc.); (2) elementary set theory; (3) very basic group theory.

<u>Text</u>: There is no "official" text for this course. However, the lectures will roughly follow certain sectons of:

      J.E. Graver & M.E. Watkins, *Combinatorics with Emphasis on the Theory of Graphs*, Springer-Verlag, New York and Berlin, 1977.

Since this book has been out of print for several years, it is not a "required" text. However, several copies are on reserve for overnight use in the Mathematics Library, along with three other texts which may be helpful from time to time:
      E. L. Lawler, *Combinatorial Optimization; Networks and Matroids*
      C.L. Liu, *Introduction to Combinatorial Mathematics,* McGraw Hill, 1968;
      H.J. Ryser, *Combinatorial Mathematics,* Math. Assoc. America, 1963;

<u>Required work</u>: There are five problem sets, consisting of from 5 to 8 problems each, more or less as follows:

Sections from G & W	Subject matter	Approximate due date
I(A,B, C, D,)	Finite sets	9 February
I(E) and IX(A, B)	Basic enumeration, intro to designs	23 February
IX(C, D) and VIII(B)	Designs, Ramsey Theory	11 March
XI(A, B, C) and II(E)	Enumeration, automorphisms groups of systems	13 April
X(A,B,C,D,E)	Matroid theory	7 May.

The Final Exam will be a two-hour, closed-book exam on Friday, 7 May at 8:00 am and will count 25% of the course grade.

The problem sets should be written up carefully, with notation that is well chosen and consistent. The style should be that of a mathematical text or research paper and appropriate to the mathematical maturity of a graduate student in Mathematics or a related field. A good criterion for clarity and detail is, "Could a fellow graduate student at my level follow my arguments completely but without being talked down to?" The write-ups should be proofread before being submitted.

The problems will be assigned as we encounter the relevant material in lecture. The last problem of each set will be assigned about one week before the due date for that set. The various problems will not necessarily be of equal weight in terms of computing their grade.

Collaboration with classmates on approaches to the assigned problems is permitted, even encouraged. However, each student must write up his/her own solutions independently. You should give credit to a fellow student whose ideas you may have used, and you may use material that you find (on your own) in a book or journal. Otherwise, solutions by people not currently enrolled in MAT 646 is not permitted.

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THE MATERIAL BELOW IS REQUIRED BY THE UNIVERSITY IN ALL SYALLBI:

Students with Disabilities: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), http://disabilityservices.syr.edu, located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. You are also welcome to contact me privately to discuss your academic needs although I cannot arrange for disability-related accommodations. Making arrangements with ODS takes time. Do not wait until just before the first test.

Academic Integrity: The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see http://academic integrity.syr.edu