Syllabus - MATH 2400
Applied Graph Theory
Fall 2010

Instructor: Dr. M. Davidson
431 Machray Hall
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Lectures:
12:30–1:20 Monday, Wednesday, & Friday

Office Hours:
Monday, Tuesday, & Wednesday 2:30 - 3:30 ;

Textbook: Joan M. Aldous and Robin J Wilson, *Graphs and Applications, an introductory approach*, Springer, 2000

Tentative Topics:

- ⋆ **Chapter 1:** Introduction to graphs, digraphs, networks
- ⋆ **Chapter 2:** graphs, subgraphs, degrees, paths, cycles, regular, bipartite, four cubes problem
- ⋆ **Chapter 3:** Eulerian graphs, Hamiltionian graphs, knight's tour, Gray codes
- ⋆ **Chapter 4:** Digraphs, rotating drum, tournaments
- ⋆ **Chapter 5:** Adjacency Matrices, walks, incidence matrices
- ⋆ **Chapter 6 & 7:** Trees, spanning trees, rooted trees, labelled trees, binary trees, chemical trees
- ⋆ **Chapter 8 & 9:** Algorithms, traveling salesman problem, shortest path algorithm
- ⋆ **Chapter 11:** Planarity, Euler's Formula, Kuratowski's Theorem
- ⋆ **Chapter 10:** (if time permits) Path and Connectivity, Menger's Theorem
- ⋆ **Chapter 12 & 13:** (if time permits) Vertex colourings, edge colourings

Evaluation of Student Performance:

Participation	5 %	classroom discussions, discussion of homework, attendance.
Midterm Test	35%	Wednesday, October 27$^{\text{th}}$
Final Examination	60%	(3 hours) - to be scheduled

Website:

http://home.cc.umanitoba.ca/∼ davidsom/

Notes:

- ◇ The Voluntary Withdrawal Deadline is Wednesday, November 17$^{\text{th}}$
- ◇ If you miss the midterm, you will be assigned a grade of 'zero' unless reasons and acceptable supporting evidence are provided.
- ◇ Calculators will NOT be permitted during midterm or final exam.

Note on Academic Honesty

The Department of Mathematics, the Faculty of Science and the University of Manitoba regard acts of academic dishonesty in quizzes, tests, examinations or assignments as serious offenses and may assess a variety of penalties depending on the nature of the offense.

Acts of academic dishonesty include bringing unauthorized materials into a test or exam, copying from another student, plagiarism and examination personation. Students are advised to read section 7 (Academic Integrity) and section 4.2.8 (Examinations: Personations) in the "General Academic Regulations and Requirements" of the current Undergraduate Calendar. **Note, in particular that cell phones and pagers are explicitly listed as unauthorized materials, and hence may not be present during tests or examinations.**

Penalties for violation include being assigned a grade of zero on a test or assignment, being assigned a grade of "**F**" in a course, compulsory withdrawal from a course or program, suspension from a course/program/faculty or even expulsion from the University. For specific details about the nature of penalties that may be assessed upon conviction of an act of academic dishonesty, students are referred to University Policy 1202 (*Student Discipline Bylaw*) and to the Department of Mathematics policy concerning minimum penalties for acts of academic dishonesty.

The Student Discipline Bylaw is printed in its entirety in the Student Guide, and is also available on-line or through the Office of the University Secretary. Minimum penalties assessed by the Department of Mathematics for acts of academic dishonesty are available on the Department of Mathematics web-page.

All Faculty members (and their teaching assistants) have been instructed to be vigilant and report incidents of academic dishonesty to the Head of the Department.