

Syllabus - MATH 2400

Applied Graph Theory

Winter 2015

Instructor: Dr. M. Davidson
431 Machray Hall
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Office Hours:

Monday, Wednesday, Thursday 1:30 - 2:30

Lectures:

8:30 - 9:20 Monday, Wednesday, & Friday

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, Hamiltonian 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, longest path algorithm, scheduling
- ★ **Chapter 10:** (as time permits, selected topics) Path and connectivity, Menger's Theorem
- ★ **Chapter 11:** Planarity, Euler's Formula, Kuratowski's Theorem
- ★ **Chapter 12 & 13:** (as time permits, selected topics) Vertex colourings, edge colourings

Evaluation of Student Performance:

Participation	5 %	classroom participation; Worksheets.
Midterm Tests	40%	Two test (1 hour each)
Final Examination	55%	(3 hours) - to be scheduled during the final examination period

Midterm Tests: There will be midterms from 5:30 - 6:30 PM on:
Wednesday, February 4th and Wednesday, March 11th
Each midterm will count for 20% of your grade. Locations of midterms will be announced in class close to midterm date.

Website:

<http://home.cc.umanitoba.ca/~davidsom/>

Notes:

- ◇ The Voluntary Withdrawal Deadline is March 19th.
- ◇ Note that past examinations are to be used for practice only: there is no guarantee that your examinations in this course will in any way be similar.
- ◇ If you miss the midterm, you will be assigned a grade of 'zero' unless reasons and acceptable supporting evidence are provided. There will be no make-up midterms.
- ◇ Calculators will NOT be permitted during midterms or final exam.
- ◇ No participation credit will be available after the last day of classes.

Faculty of Science Statement on Academic Dishonesty

The Faculty of Science and The University of Manitoba regard acts of academic dishonesty in quizzes, tests, examinations, laboratory reports or assignments as serious offences and may assess a variety of penalties depending on the nature of the offence.

Acts of academic dishonesty include, but are not limited to bringing unauthorized materials into a test or exam, copying from another individual, using answers provided by tutors, plagiarism, and examination personation.

Note: cell phones, pagers, PDAs, MP3 units or electronic translators are explicitly listed as unauthorized materials, and must not be present during tests or examinations.

Penalties that may apply, as provided for under the University of Manitoba's Student Discipline ByLaw, range from a grade of zero for the assignment or examination, failure in the course, to expulsion from the University. The Student Discipline ByLaw may be accessed at:

http://umanitoba.ca/admin/governance/governing_documents/students/868.htm

Suggested minimum penalties assessed by the Faculty of Science for acts of academic dishonesty are available on the Faculty of Science webpage:

http://umanitoba.ca/faculties/science/resources/Discipline_Penalties_Table_Jul09.pdf

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