

Math 3V03 Graph Theory Course Outline for Term 2 Winter 2011 – 2012

Instructor: Libor Barto, HH 409, lbarto@math.mcmaster.ca

Lectures: MWR 13:30 – 14:20 in HH 102

Office hours: MWR 14:30 – 15:30 in HH 409 or by appointment

Website: www.karlin.mff.cuni.cz/~barto/math3v03.html

Text:

- (1) (main) Introduction to Graph Theory, 2nd edition by Douglas B. West, Prentice Hall.
- (2) Graph Theory with Applications by J. A. Bondy and U. S. R. Murphy, North Holland, <http://www.math.jussieu.fr/~jabondy/books/gtwa/gtwa.html>

Both books are optional, all the required material will be covered in class.

Course objective: To learn the fundamental concepts in graph theory, with a sense of some of its modern applications. Also, to learn to understand and create mathematical proofs, including an appreciation of why this is important.

Course outline: Graphs: definition, examples, elementary properties. Trees, matching, connectivity, coloring. We will cover chapters 1,2 of (1) in detail and selected material up to chapter 7. A tentative lecture schedule is posted on the course website.

Lectures and Tutorials: There will be three lectures per week. There are no tutorials.

Assessment: Your grade will be based on homework assignments, two in-class midterms and the final exam. The distribution is as follows, although the instructor reserves the right to change the weight of any portion of this marking scheme.

- Homework – 35%
- Midterm I – 15% (tentative date is Thursday, 9 February, in class)
- Midterm II - 15% (tentative date is Thursday, 15 March, in class)
- Final - 35%

Homework: There will be nine homework assignments, due approximately every week on Thursday (exact dates are on the website). The homework is to be handed at the start of the class on the date given. The two lowest grades on the homeworks will be dropped.

Late assignments will not be marked. Solutions will be posted on the course website.

All work submitted must be your own. At the same time, you are encouraged to discuss problems and general ideas with each other. Mathematics need not be an isolating activity. What you may not do is to copy someone else's work.

Recommended problems: Recommended problems are an essential part of the course. They will be given on the website, some of them will be discussed in class. Working through these problems will help you understand the material of the course. It cannot be stressed too much that **to understand mathematics you must do it**. The recommended problems as well as the homework problems are the minimum work you should be doing per week in order to keep up with the material of the course.

Exams: The exams will involve both theory and examples. You will be required to state definitions, prove theorems that you have seen before, and solve problems that may involve proofs. The midterms will be held during class time.

The final exam will be administered by the registrar's office and will cover all course material.

You must bring your student ID to the midterms and the final exam. Calculators are not allowed in the midterms and final exam.

MSAF: If you are absent from the university for a minor medical reason, lasting fewer than 5 days, you may, once per term, report your absence without documentation, using the McMaster Student Absence Form. Absences for a longer duration or for other reasons must be reported to your Faculty/Program office, with documentation, and relief from term work may not necessarily be granted. When using the MSAF, report your absence to lbarto@math.mcmaster.ca. If you have missed a midterm, your excused absence will be recorded, and the weight of the midterm will be redistributed to other components of the course. If you have missed a homework deadline, there will be no alternative deadline. Please note that the MSAF may not be used for term work worth 30% or more, nor can it be used for the final examination.

Academic Integrity: You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at <http://www.mcmaster.ca/academicintegrity>.

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

Important Message: The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.