

University of Manitoba
Department of Mathematics, Faculty of Science
May–June 2014

Course Number and Title: MATH 1010 Applied Finite Mathematics

Number of Credit Hours: 3

Pre-requisites: None

Class Times and Location: Monday & Wednesday 7:00-9:45 in Armes 201

Tutorial Times and Locations: **B01** 415 Machray Hall, Tuesday 7:00–8:30
B02 115 Armes, Tuesday 7:00-8:30

Instructor information: D. Trim, Office MH410A, Telephone 474-8760,
Email- Donald.Trim@umanitoba.ca

Office hours: MW 6:00-7:00; TR 5:00-6:00

I will endeavour to be in my office at these times, but unforeseen circumstances may sometimes prevent me from being there, and I apologize for this. If these hours do not fit your schedule, I am willing to discuss an alternative time for an appointment. If my door is open at any time outside official office hours, feel free to ask me any questions concerning the course. If the door is closed, I am either not in, or prefer not to be disturbed. When you have difficulty with a certain exercise, and you wish to discuss it with me, bring whatever attempts you have made to solve the problem. This makes it much easier for me to diagnose what is troubling you. It is my practice to read my email first thing each morning (and sometimes at other times during the day). I will endeavour to answer any inquiries within 24 hours.

Web Page: The web page for the course can be found at

www.home.cc.umanitoba.ca/~dtrim/

Follow the links to this course.

Web Page for Old Tests and Exams: www.math.umanitoba.ca/courses

Past examinations are for practice only. There is no guarantee that your examinations this term will be similar to examinations from previous years.

Calendar Description of Course:

For students needing to fill the requirement of a university level mathematics course. Introduces students to modern applications of discrete mathematics. Topics include: mathematics of finance, linear programming, graph theory, and game theory. This is a terminal course and may not be used as a prerequisite for other Mathematics courses. This course cannot be used as part of an Honours, Major, General, or Minor program in the mathematical sciences. Not available to any student already holding a grade of C or better in any mathematics course with the exception of MATH 1020 (136.102), FA 1020 (054.102), MATH 1190, MATH 1191 (136.119). Not to be held concurrently with any other Mathematics course with the exception of MATH 1020, FA 1020, MATH 1190, or MATH 1191. No prerequisite.

A more Detailed Description of the Course:

Linear equations and inequalities in one and two variables, modeling situations with linear equations; using geometry to solve linear programming problems; matrices and the solution of systems of linear equations using Gaussian elimination, Gauss-Jordan elimination, and inverse matrices; graph theory; mathematics of finance

Goals: The course has six main goals:

1. solving linear equations and inequalities
2. modeling situations with linear equations
3. solving linear programming problems
4. manipulating matrices and solving systems of linear equations
5. understanding the concepts of graph theory
6. solving problems in the mathematics of finance

Instructional Objectives: At the completion of the course, the student is expected to be able to:

1. solve systems of linear equations and inequalities in one and two variables
2. set up linear equations to describe various situations
3. model linear programming problems and solve them with the method of polygons
4. add, subtract, multiply, and find inverses of matrices
5. use Gaussian and Gauss-Jordan elimination and inverse matrices to solve systems of linear equations
6. model and solve problems with graphs
7. calculate matrices associated with graphs
8. calculate quantities associated with simple and compound interest, annuities, loans, and mortgages

Textbook: Notes for Math 1010 Applied Finite Mathematics
Optionally, **Solutions Manual for Notes for Math 1010**
Applied Finite Mathematics

All sections of the notes may not be covered. Information about which sections are required material will be given in lectures.

Evaluation: There are three components contributing to the final grade in the course.

1. Two one-hour tests each counting 15% of the final grade in the course will be conducted between 7:00 and 8:00 on May 20 and June 10. Material that you will be responsible for on the tests will be announced in class. There are no make-up tests if you miss one. If you miss a test and can provide an acceptable reason for doing so, accompanied by supporting evidence, marks will be redistributed between the other test and the final examination.

2. Four assignments each counting 5% of the final grade for a total of 20%. Attached to each assignment must be an honesty declaration. It can be downloaded from the web page for the course. Assignments without a declaration will be deducted 20%. Since solutions to assignments will be posted immediately after submission, late assignments will not be accepted.

3. A two-hour final exam, scheduled by student records, counting 50% of the final grade.

Single line calculators are allowed for the tests and the final exam.

Grading: The following can be used as a guide in changing numerical grades to letter grades. It is only a guide, however, as fluctuations in grade lines may occur.

Numerical Grade	Letter Grade
90-100	A+
80-89	A
74-79	B+
68 -73	B
61-67	C+
55-60	C
50-54	D
0-49	F

Voluntary Withdrawal Date: Voluntary withdrawal date is May 22, 2014.

Academic Dishonesty:

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

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.

All students are advised to familiarize themselves with the Student Discipline Bylaw, which 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.

This is what you can expect of me:

- make every effort to plan the course and each class so that learning will be maximized
- arrive five minutes early and begin class at precisely the appointed time
- conduct classes, and not give lectures. I will explain this under my expectations of you.
- be patient when you struggle with ideas (struggling reveals that learning is taking place)
- be open to suggestions (suggestions can often lead to improvements in a course)
- treat you as adult learners, with related respect
- provide you with plenty of office hours for consultations I encourage you to see me during office hours as soon as you encounter difficulties. Do not delay.

This is what I expect of you:

- be punctual. The first few moments of a class are the most important. There is often a quick review of the main ideas from the last class and how they lead into the present class. General ideas and the “big picture” are often discussed in the first few moments. You are doing yourself a disservice by missing these discussions (as well as perhaps disturbing me and the rest of the class by being tardy).
- participate in class, which includes both speaking up and listening. Learning begins in class but most of it takes place when you study. Learning will begin here only if you contribute to the class; what you put into a class is directly related to what you get out. I will ask you many questions in the course of a class and for many different reasons. Your learning is substantially enhanced if you offer an answer, or at least formulate one. Do not come to class for the sole purpose of taking notes; that does not contribute to your learning. In order to answer many of the questions that I will pose, it is necessary for you to be familiar with what has transpired in recent classes. Try to keep up.
- be courteous when others are speaking. Only one person should be speaking at any given time during class. If you repeatedly have conversations with your neighbour while others are discussing course material, I will ask you to leave the room.
- complete all requirements of the course.
- use college-level, mathematical writing, legible and with correct format. There are many worked out examples in the notes and solutions manual; these should guide you on how to write solutions to problems on tests.
- be honest. Assignments, tests, and examination submissions must be your own work.
- have the courage to ask questions in class if something is not clear. If you have a problem, it is quite possible that someone else has the same problem. I will attempt to clear the difficulty immediately. Should I not be able to do so, I may ask you to see me after class for further clarification.
- discuss difficulties that you are having with course material as quickly as possible. The longer you leave a difficulty unresolved, the more unbearable

it becomes, and the further and further behind you become. I have plenty of office hours, or you can see me immediately before or after class to set up a special appointment.

- turn off cell phones when entering class