

UNIVERSITY OF NORTHERN BRITISH COLUMBIA
MATHEMATICS PROGRAM
MATHEMATICS 150: FINITE MATHEMATICS FOR BUSINESS &
ECONOMICS
FALL 2009
COURSE OUTLINE

The course covers functions and graphs, linear systems of equations, matrix notation and properties, matrix inversion, linear programming, sets, counting and probability, and an introduction to actuarial mathematics. This course is offered primarily for students in the School of Business and the Economics Program.

By registering for this course (MATH 150), it is assumed that you automatically agree to abide by the rules, procedures, etc. laid out within this outline.

If there is any part of this outline which appears to contradict UNBC guidelines on social and academic conduct, then the appropriate UNBC guideline shall take priority.

Contact Information

I can be reached as follows:

- **Instructor:** Dr Jamie Sanchez-Fortún Stoker
- **Office:** T&L 10–2014
- **Telephone:** x 5169
- **Email:** sanche0@unbc.ca

Prerequisites

C– or better in MATH 115, Principles of Math 12 or permission of instructor.

Website

Material relating to the course can be found on my website (<http://web.unbc.ca/~sanche0>). It may be accessed by following the link: Teaching → MATHEMATICS 150 (Fall 2009). Note that the material is password protected, the password being **tyner**.

Posted material may include:

- Figures & tables.
- Quiz information.
- Midterm exam information.
- Final exam information.
- Any additional information relevant to the course.

In particular, there is a page on my website called “Latest News”. As its name suggests, this is where I will post information on a day-to-day basis that I consider to be important. As such, you are strongly advised to check it out on a regular basis.

Disability Services

If there are any students in this course who, because of disability, may have a need for special academic accommodations, please come and discuss this with me, or contact Disability Services located in room 10-1048.

Lectures:

- **Days:** Monday, Wednesday, Friday
- **Time:** 1:30 pm – 2:20 pm
- **Location:** Agora 7-238

Lectures will generally have the following format:

- Incomplete lecture notes will be made available in advance of lectures in pdf format for download from the course website.
- Lecture notes will be reviewed in class primarily using the PC and whiteboard.
- Due to time constraints, only a few examples will be given. Students are strongly advised to find their own.

Attendance

It is my expectation that you will attend the class regularly. If you must miss a class it is your responsibility to find out what you missed. You can do this by asking a friend or by coming to my office. If you have what is, in my opinion, a valid reason for missing a lecture, and are unable to obtain a set of completed notes, please try to let me know as soon as possible. I may allow you to look at my notes within the confines of my office during the scheduled office hours.

Office Hours & General Availability

I am available as follows:

Office hours: the precise times are TBA. I intend to have two weekly office hours. At these times, I guarantee that I will be in my office and available for consultation. No matter what I'm doing, please feel free to disturb me. At any other time, you are welcome to drop by my office – if my

door is open, please feel free to approach me. However, I reserve the right to politely ask you to come back later!

Email: I can be reached by email at the address given above. I will endeavour to answer any student emails within 48 hours of receipt. However, those sent over the weekend may not be dealt with until Monday at the earliest.

Appointment: please feel free to email me to arrange an appointment.

Ethical behaviour

It is every student's responsibility to work and study in an ethical manner. Please read Section 44 Academic Offences of the University Calendar (<http://www.unbc.ca/calendar/undergraduate/general/regulations.html>). This section explains the possible penalties for academic misconduct.

The rules of Student Conduct as outlined in the calendar apply to all students. In particular, academic offences are taken extremely seriously by the University and this department. Remember that you are here for your own benefit, and any form of cheating makes your effort meaningless.

Lecture Courtesy

Please show basic respect and courtesy to the instructor as well as others during lectures. Cell phones, MP3 players and other devices that may make a noise are to be turned off during class. Idle conversation, eating, reading a newspaper, text messaging or using a laptop for non-course-related purposes is distracting and discourteous. Anyone causing a distraction will be required to leave the class and will not gain any marks for that days activities.

Textbook

The materials suggested for this course are:

- **Highly recommended:** *Finite Mathematics For The Managerial, Life and Social Sciences* by S T Tan, 9th ed. (Brooks/Cole CENGAGE Learning).
- **Recommended:** Solution Manual and Video Skill builder for the Tan text.

Both of these sources are currently available in the UNBC bookstore, and a copy of the recom-

mended textbook is on hold in the library. As with the vast majority of instructors teaching university-level courses, I will assume that all students will purchase a copy of the recommended textbook. However, students should be aware that I will consider my lecture notes to be the primary source of material for this course, while the textbook is secondary.

You are also encouraged to consult other first-year university-level textbooks on finite math. There are a variety of such texts on the market, a few of which can be found in the University library, or even purchased in used book stores. Not only do such texts give an explanation of the material from a slightly different viewpoint, they are also a great source of sample problems/solutions and end-of-chapter problems.

Mark Distribution

This will probably be as follows:

- **Class Quizzes:** 15% (best 7 of 8).
- **Midterm exam I:** 15%
- **Midterm exam II:** 15%
- **Midterm exam III:** 15%
- **Final exam:** 40%

Note that I reserve the right to change this scheme in accordance with UNBC regulations, although I will inform students of any changes, both verbally in lectures, and on the MATH 150 website. Note that students **must** attend the final exam in order to pass the course. Also, students are strongly advised not to make travel plans until the final exam schedule is posted.

Quizzes

As indicated above, there will be a total of **EIGHT** quizzes throughout the course. These will take place during the first 15 minutes of class on the dates indicated in the “Important dates” section of this outline. Note that the quizzes will end promptly at 1:45pm. Any late comers to the class will not be allowed additional time. There will be **no** makeup quizzes.

Midterm Exams

As indicated above, there will be **THREE** midterm exams. All three midterms will be held from 1:30 pm–2:20 pm in Agora 7–238 on the following dates:

- **Midterm I:** Wednesday 23 September.
- **Midterm II:** Wednesday 21 October.
- **Midterm III:** Wednesday 25 November.

The midterm exams will be 50 minutes in length. Students are therefore advised to arrive promptly. Material covered in the midterm could be on anything from the start of the course up to a point in the notes announced by me a lecture or so in advance.

Final Exam

The date and location of the final are unknown at the time of writing.

Study Habits & Sources of Help

Math can be a difficult subject at the best of times, especially for students who are non-math majors! Although there are no official tutorial sessions for this class, it is essential that you are aware of – and take advantage of – the multiple sources of help that are available to you.

Studies have shown that one of the prime indicators of success at university is time management. The best way to ensure success in this class is to carefully study all the material, do the example questions and all the suggested exercises. There is no substitute for this. If you find you are having difficulty it is best to be able to ask for help as early as possible. You are **strongly** advised to make use of the following:

Your Instructor: Please feel free to contact me if you need any help – by any of the methods outlined in my contact information.

Textbooks: As mentioned earlier, it is extremely useful to consult a variety of generic first-year university textbooks on finite math. These are a great source of worked examples, end-of-chapter questions (with some solutions often given in the back). They also provide an alternative explanation of a particular topic.

Private Tuition from LSC: *Mathematics, Statistics, and Physics tutors conduct one-to-one or small group sessions with students in a variety of first and second year courses. Tutors can help you understand concepts, identify mistakes you are making, and suggest problem-solving approaches. Tutors are provided with initial and ongoing training and are certified by the International Certification Program of the CRLA. Learning Skills Centre tutors are UNBC students who*

- *Have excellent Math, Stats, or Physics skills.*
- *Are recommended by their professors.*
- *Complete a rigorous hiring process.*
- *Display good people skills.*
- *Demonstrate an interest in teaching and learning.*

(http://www.unbc.ca/lsc/tutoring/math_stats.html.)

MACE: *The Mathematical Academic Centre for Excellence is available for use by students taking courses with a high mathematics content. The room can be used for working in groups or for getting help from tutors and faculty who are available at scheduled times. Drop into MACE to...*

- *Do mathematics.*
- *Find a study group.*
- *Do science based mathematics.*
- *Get help from faculty, tutors, graduate students, and peers.*
- *Do business based mathematics.*
- *Think mathematically.*

MACE is open all day on the 2nd floor of the Teaching & Learning Building, Room 10-2088.
(http://www.unbc.ca/lsc/mathematical_academic_centre_for_excellence/index.html)

Study groups: Form your own study group within the class!

Exam Absence

It is the responsibility of students to identify important dates such as those on which the midterm and final exams fall. Although students are, of course, strongly advised to prepare adequately for the various exams, I do understand that unforeseen circumstances do occur. Any student who cannot sit an exam for whatever reason, needs to inform me **as soon as possible, ahead** of time, with a stated reason. It will be at my discretion whether or not the stated reason is valid, and hence what the consequences will be.

Unless I consider the situation to be unavoidable, I am unwilling to accept exam absence after the deadline or exam time. In such cases, students will automatically receive zero for that assignment/exam. Students are advised that they need to inform me **directly**:

- Contact should preferably be via email (since then it becomes documented).
- Alternative methods are telephone or face-to-face (although I would require email confirmation).
- If you cannot inform me yourself, you are welcome to instruct a family member or friend to inform me on your behalf (via email).

In all cases of exam absence, appropriate documentary evidence will **always** be required. Although I may agree to rearrange an exam for a later date, I will **not** arrange to have your exam graded until I first receive your documentary evidence.

With respect to the final exam, students should be aware of section 42 of the Undergraduate Regulation and Policies (<http://www.unbc.ca/calendar/undergraduate/general/regulations.html>):

42. Final Examinations Missed

Satisfactory explanation, with supporting documentation as appropriate, for any final examination missed must be made by the student or designate to the Office of the Registrar within 48 hours from the time the examination was written.

Within 48 hours of receiving a submission, the Registrar or designate may direct the Program under which the course is offered to arrange the writing of a special examination in the case of an examination which was missed.

Normally, for explanations of sickness, a doctor's certification is required.

Although by no means exhaustive, the following is a list of the more common situations that may arise:

Illness/injury: if illness or injury prevents you from attending an exam, in addition to being informed beforehand, I will require a detailed note from a physician. In the case of an assignment, I will only consider cases in which the illness/injury has lasted for more than three days prior to the deadline, and once again I will require a physician's note. In both cases, this note should be on headed paper, and specifically contain the dates of the illness.

Death of friend/family member: although a very unfortunate and sensitive situation, documented evidence will still be required. For example, either of the following will suffice:

- A published obituary.
- A program from the funeral service.
- A note from a religious official overseeing the funeral (the note should contain name and contact details).
- A note from an official at a funeral home (the note should contain the name and contact details).

Religious reason: if an exam/quiz falls on a religious day, or the sitting the exam/quiz at that particular time of day is prohibited by the particular religion, I will require a note from the student's religious leader. Please note that only religions accepted as such by UNBC will be recognised.

Off-campus official UNBC event: if a student is away from campus for several days due to an event in which he/she is participating as part of an **official** UNBC team or body, I will require a note from an appropriate overseer – for example, team manager or coach.

Course Goals:

This is a first year course mainly intended to introduce Commerce students to a range of mathematical ideas covering several topics that complement concepts or calculations used in economics or business fields. The emphasis is on mathematical foundation, more than on any replication of

calculations that would be performed in a business course. Upon successful completion of the course students should have developed their mathematical reasoning skills to the point that they are able to:

- Read a math text and apply methods described.
- Answer questions similar in nature to those presented in class,
- Clearly identify the question and present a logical and legible answer, and
- Face future courses and math concepts with confidence.

The secondary objective is for each student to leave the class with the ability to navigate university life successfully by becoming personally responsible for their individual education.

Course Outline

The following is a tentative outline for the topics to be covered in this course. Note, however, that it should be taken as a guideline only – it is anticipated that due to time issues, not all of the topics listed will be covered. As such, the outline may change during the semester.

- Review of basic algebra, graphing straight lines and inequalities.
- Solving systems of linear equations using matrices, matrix arithmetic and inverting a matrix.
- Linear programming both geometrically and using the simplex method.
- Sets, counting, Venn diagrams, permutations, and combinations.
- Introductory probability, sample spaces, events, conditional probability, independence, odds.
- Markov Chains. Introduction to game theory.
- Interest, annuities, and amortisation of loans.

Calculators

You will not need a calculator for this course. However, if you choose to use one it **must** be a 6-button calculator that can do only the following functions: addition, subtraction, multiplication, division, percent, and square root. You must have your calculator approved before use. Anyone found using a non-approved calculator will receive a mark of **zero** for that test or quiz.

Important Dates

The following dates should be noted:

Fri Sep 18: Quiz I.

Mon Sep 21: Last day to add/drop September Semester courses without financial penalty. Last day to change September Semester courses from audit to credit and credit to audit.

Wed Sep 23: Midterm I.

Fri Oct 2: Quiz II.

Fri Oct 9: Quiz III.

Mon Oct 12: Thanksgiving Day. University closed.

Fri Oct 16: Quiz IV.

Tue Oct 20: Last day to withdraw from September Semester courses without academic penalty. 50% tuition refund.

Wed Oct 21: Midterm II.

Fri Oct 30: Quiz V.

Fri Nov 6: Quiz VI.

Wed Nov 11: Remembrance Day. University closed.

Fri Nov 20: Quiz VII.

Wed Nov 25: Midterm III.

Fri Nov 27: Quiz VIII.

Fri Dec 4: Last day of classes.

Mon Dec 7: First day of exam period.

Fri Dec 18: Last day of exam period.