Course Outline
MATH 151 (Finite Mathematics), Spring 2009

Course Description:

This course presents an introduction to basic concepts in finite mathematics. The student is introduced to the notions of combinatorial counting and elementary probability theory, as well as topics on linear algebra and financial mathematics. The course equips the student with basic counting principles and techniques, which are used as a platform from which to develope a systematic approach toward discrete event probability theory. Course content include the following: systems of linear equations and matrices; linear programming; mathematics of finance; counting techniques; probability; random variables, expected value, discrete probability distributions; Markov chains.

Instructor:

Stephen Benecke
Office: SSM A455
Office Hours: MWR 2:00 - 3:00
Phone: 250-472-5314
Email: stephen.benecke@gmail.com

Students are encouraged to approach the instructor if they wish to discuss any aspect of the course, either during office hours or by appointment.

Assistance Centre:

If the instructor is unavailable and you need assistance, you may go to the Mathematics Assistance Centres which are located in Room A202 in the Social Sciences and Mathematics (SSM) building, and in the C.W. Lui Learning Commons in the main Library. Hours of operation for the Mathematics Assistance Centres will be announced on the department website (`http://www.math.uvic.ca`, Assistance Centre). These hours are subject to change. It is staffed by able mathematics graduate students who are paid to help you.

Review:

Students are expected to review Sections 3.1 and 6.1 prior to the relevant lectures on these topics and are advised to attempt as many of the exercises as possible.

Timetable:

Lecture meetings occur for a total of 3 hours per week (as indicated below).

Day	Time	Venue
Monday	3:30 - 4:30	CLE A-127
Wednesday	3:30 - 4:30	CLE A-127
Thursday	3:30 - 4:30	CLE A-127

Course Material:

The following text book will be used throughout this course:

T. Tan, *Finite Mathematics for the Managerial, Life, and Social Sciences* (9th ed), Thomson Brooks/Cole, 2006 [ISBN 0-495-38753-3].

References will be made to the ninth edition, which is available in the UVic Bookstore. However, students may also use the eighth edition which differs little from the ninth edition.

The MATH 151 Handbook will also be used for selected topics not covered in the text book, as well as additional review exercises. It can also be purchased at the UVic Bookstore.

Students are **only** allowed to use the **Sharp EL-510-R** calculator. **No other calculators will be allowed during examinations.** These calculators may be purchased in the UVic Bookstore.

Course Webpage:

Students are encouraged to visit the course webpage on a regular basis. Besides the fact that the homework assignments will be posted here, it is also a useful tool to convey important information regarding the course. The page is accessible through the Department website, under "Course Pages", or through the instructor's website at `http://math.uvic.ca/~stephen/index.html`.

Course Assessment:

There will be two midterm tests on the dates shown below. Each of these tests contributes 15% to the final grade. Note that each test covers approximately one half of the material. In addition, assignments will be presented throughout the term. Each assignment contributes 2% to the final grade, for a total of 10%. The final examination contributes 60% to the final grade.

Assessment Opportunity	Percentage
Test 1 (February 9)	15%
Test 2 (March 23)	15%
Assignments	10%
Final (TBA)	60%

Once marked, midterm tests will be returned in class, or may be claimed during office hours. There will be no make–up tests. If a student misses a test due to reasons in accordance with the regulation on Illness, Accident or Family Affliction, the instructor should be notified as soon as possible. A written request to be excused, as well as the relevant supporting documentation, should be submitted prior to the test. In such cases the final exam score will be used to assign a score for the missed test.

Students are strongly advised to **not** make final plans for travel or employment during exam period, since special arrangements will not be made for examinations that may conflict with such plans.

Questions or concerns regarding graded test or assignment papers should be brought to the attention of the instructor within 7 calendar days of the date when it was returned. Grades will be posted by student number on the website. If a student wishes to be excluded from this posting, the instructor should be notified in writing.

The nature of what you will be expected to do on the tests and final examination is largely defined by the problems from the text listed in the Course Outline and Suggested Problems (below), as well as the exercises and sample tests in the Handbook.

Students are **only** allowed to use the **Sharp EL-510-R** calculator. **No other calculators will be allowed during examinations.** Students are not allowed to use a "help" or "formulasheet" and may not have in their possession during a test any paper other than what is provided to you by the invigilators. Candidates found communicating with one another in any way, or having unauthorized books, papers, or communication devices such as cell phones and PDA's in their possession, will be considered in violation of the University Policy on

Academic Integrity.

Assignments:

There will be 5 Homework Assignments presented throughout the course, according to the schedule below. These assignments test the student's understanding of the various mathematical concepts and his/her ability to answer various questions based on the course material. The assignments are to be handed in at the start of the session in which they are due.

Note that late assignments will not be accepted.

Homework Assignment	Available	Due
Assignment 1	Monday, January 12	Monday, January 26
Assignment 2	Monday, January 26	Thursday, February 5
Assignment 3	Wednesday, February 11	Thursday, February 26
Assignment 4	Thursday, February 26	Thursday, March 19
Assignment 5	Thursday, March 19	Wednesday, April 1

The assignments as well as solutions will be posted on the course webpage according to the above schedule. Students are encouraged to check the website regularly for updates. Please note that unclaimed tests will only be retained until May 31$^{\text{st}}$, 2009. All unclaimed work will be destroyed after this date.

Final Examination:

The final examination will be scheduled by Records Services to occur during the formal examination period. The date and time of this examination will be posted on official University Bulletin Boards at least two weeks before the beginning of the formal examination period. Students must write the final examination on the date and time published by Records Services unless they qualify for a deferred examination as outlined in the UVic Calendar.

Test Dates:

The two midterm tests will take place during normal lecture sessions on the following predetermined dates. Students will be allowed 50 minutes to complete the test.

- Test 1: Monday, February 9, 3:30 - 4:20 CLE A-127

- Test 2: Monday, March 23, 3:30 - 4:20 CLE A-127

Students are expected to attend all lectures and the course will be conducted on that basis.

This document is prepared several weeks before the beginning of classes. It is possible that some of the information in it will have to be modified before classes end. Any such changes will be announced in class and the web version of this document will be updated. If you miss such an announcement because you did not attend class, you must accept the consequences of not having learned of the change.

Suggested Exercises:

A list of suggested exercises are provided in the MATH 151 Handbook. Students are strongly encouraged to attempt as many of these exercises as possible, as soon as the corresponding material is discussed in class.

Schedule
MATH 151 (Finite Mathematics), Section F02, 2007

Mon, January 5	Introduction
Wed, January 7	6.1 Sets and Set Operations
Thu, January 8	6.2 The Number of Elements in a Finite Set
Mon, January 12	6.3 The Multiplication Principle
Wed, January 14	6.4 Permutations and Combinations
Thu, January 15	6.4 Permutations and Combinations
Mon, January 19	7.1 Experiments, Sample Spaces, and Events
Wed, January 21	7.2 Definition of Probability
Thu, January 22	7.3 Rules of Probability
Mon, January 26	7.4 Use of Counting Techniques in Probability
Wed, January 28	7.5 Conditional Probability and Independent Events
Thu, January 29	7.5 Conditional Probability and Independent Events
Mon, February 2	7.6 Bayes' Theorem
Wed, February 4	8.1 Distributions of Random Variables
Thu, February 5	8.2 Expected Value
Mon, February 9	Midterm 1
Wed, February 11	8.4 The Binomial Distribution
Thu, February 12	Handbook 3 Hypergeometric Distribution
Mon, February 23	2.1 Systems of Linear Equations: An Introduction
Wed, February 25	2.2 Systems of Linear Equations: Unique Solutions
Thu, February 26	2.3 Systems of Linear Equations: Underdetermined and Overdetermined Systems
Mon, March 2	2.4 Matrices
Wed, March 4	2.5 Multiplication of Matrices
Thu, March 5	2.6 The Inverse of a Square Matrix
Mon, March 9	2.6 The Inverse of a Square Matrix
Wed, March 11	3.2 Linear Programming Problems
Thu, March 12	3.3 Graphical Solutions of Linear Programming Problems
Mon, March 16	Handbook 4.1 Markov Chains: Introduction
Wed, March 18	Handbook 4.2 Markov Chains: Regular Markov Chains
Thu, March 19	Handbook 4.3 Markov Chains: Absorbing Markov Chains
Mon, March 23	Midterm 2
Wed, March 25	Handbook 4.3 Markov Chains: Absorbing Markov Chains
Thu, March 26	5.1 Compound Interest
Mon, March 29	5.2 Annuities
Wed, April 1	5.2 Annuities
Thu, April 2	Review