

University Canada West
MATH 101 - Foundation Mathematics
Course Outline

Course Instructor:	Contacts:	Office:
TBA	Work: Home: Fax: E-mail: faculty.member@server.ca	

1. Course Objective

The course will cover three main areas of finite mathematics at the introductory level:

1. mathematics of finance (compound interest, present and future value, annuities),
2. statistics (descriptive statistical analysis, elementary probability, the normal distribution), and
3. linear algebra (systems of equations, matrix manipulation).

The aim of the course is for the students to become comfortable with mathematical manipulation of simple linear systems (using paper and pencil or technology as appropriate), and to give them the background needed to continue their studies in statistics, finance, business and other application areas.

2. Underlying Principles

1. The underlying theme of linear mathematics runs through most of the concepts covered in the course. Understanding one concept aids in the comprehension of all others.
2. The concepts of the course are basic and necessary to the study of more advanced topics and to the application of mathematics to other areas of study.
3. The study of mathematics, particularly probability and statistics, is fundamental to an understanding of the increasing complex modern world.

3. Course Outcomes

By the end of the course, the student should be able to:

1. calculate the present or future value of a sequence of payments,
2. present data in a graphical form and read and understand charts and graphs,
3. count the number of elements in a set, including the use of permutation and combination rules,
4. calculate probabilities of events in a finite discrete distribution,
5. calculate probabilities based on mathematical formulas, including conditional probability,
6. calculate the mean and standard deviation of a distribution,
7. calculate probabilities from the normal distribution, and
8. solve systems of linear equations in two or three variables using matrix techniques (pencil and paper) and understand the techniques applied to larger systems.

4. Evaluation and assignments

Assignments: 10%

Assignments will be primarily computational in nature but it is expected that students will provide a written explanation of their work and conclusions in addition to the mathematical work. Use of a computer spreadsheet program to complete the assignments will be encouraged. Three or four assignments will be given.

Quizzes: 30%

Quizzes will cover theoretical concepts and brief computational exercises. Students should be able to explain definitions and results in their own words. Use of the Sharp EL-510R calculator (mentioned below) will be allowed. There will be three quizzes, each covering a subset of the material in the course.

Final Exam: 60%

The final exam will be similar to the quizzes in nature but will include all material covered in the course.

Use of Technology

Students are expected to have access to a computer running a spreadsheet program which can create charts and do statistical analysis. However, for class quizzes and the final exam, the only calculating device allowed will be the Sharp EL-510R (or RB) calculator. This inexpensive calculator is available at most office supply stores.

5. Textual

Text: *Finite Mathematics for the Managerial, Life and Social Sciences (7th edition)* (2003). S. T. Tan, Brooks/Cole – Thomson Learning, Pacific Grove, CA

(Note that a *Student Solutions Manual*, containing the solutions to odd-numbered exercises, is available.)

Text web site: <http://www.brookscole.com/math/authors/tans>

6. Schedule:

<i>Unit</i>	<i>Text chapter</i>	<i>Topics</i>
1	Introduction	
2	1, Sections 1-5, pp.2-71	Review of functions, intersection of straight lines, linear least squares
3	5, Sections 1-3, pp.280-321	Present and future values, compound interest, annuities, loans
4	Handouts	Descriptive statistics – graphs, frequency distributions, measures of central tendency and dispersion
5	6, Sections 2-4, pp.346-378	Sets and counting, permutations, combinations
6	7, Sections 1-4, pp.379-414	Probability – discrete distributions, calculating probabilities, basic formulas, use of counting techniques
7	7, Sections 5-6, pp. 414-439	Probability – conditional probability, Bayes theorem
8	8, Sections 1-4, pp.440-476	Statistics – random variables, mean, variance, standard deviation, binomial distribution
9	8, Sections 5 -6, pp.477-505	Statistics – normal distribution, normal distribution and applications
10	2, Sections 1-3, pp.72-109	Linear equations – Gauss-Jordan method for solution
11	2, Sections 4-6, pp.110-155	Matrices – representation of data, manipulation, inverse of a square matrix
12		Review
