



Finite Mathematics 1 – MATH 101

University Studies Program

Course Outline

COURSE IMPLEMENTATION DATE: Pre 1998
OUTLINE EFFECTIVE DATE: September 2020
COURSE OUTLINE REVIEW DATE: April 2025

GENERAL COURSE DESCRIPTION:

This course is intended for students who require an appreciation of higher mathematics, but don't require calculus. MATH 101 stresses a logical and critical thinking approach while investigating the following topics: an introduction to matrices and to linear algebra; linear programming and the Simplex method; set theory, counting techniques and probability; and introduction to statistics; and Markov Processes.

Program Information:

MATH 101 is often taken by students working towards a B.A. or a B.Ed. It can be used as the math credit in an Associate of Arts degree or an Arts certificate, or it can be used as elective credit towards a Science certificate or degree. Together with MATH 102, it fulfills the math requirement for the University of Victoria Teacher Education program. MATH 101 can be used as a math credit for a Business Administration certificate, diploma or degree and is considered to be very good preparation for the study of statistics (STAT 106) and/or quantitative methods (ACCT 369).

Delivery: This course is delivered face to face and online.

COTR Credits: 3

Hours for this course: 45 hours

Typical Structure of Instructional Hours:

| Instructional Activity | Duration |
|------------------------------------|----------|
| Lecture Hours | 45 |
| Seminars / Tutorials | |
| Laboratory / Studio Hours | |
| Practicum / Field Experience Hours | |
| Office Hours available (optional) | |
| Total | 45 |

Practicum Hours (if applicable):

| Type of Practicum | Duration |
|------------------------|----------|
| On-the-job Experience | N/A |
| Formal Work Experience | N/A |
| Other | N/A |
| Total | |

Course Outline Author or Contact:

Leslie Molnar, B.Sc, M.A.

Signature

APPROVAL SIGNATURES:

Department Head
Erin Aasland Hall
E-mail: aaslandhall@cotr.bc.ca

Dean of Business and University Studies
Darrell Bethune
E-mail: bethune@cotr.bc.ca

Department Head Signature

Dean Signature

EDCO

Valid from: September 2020 – April 2025

Education Council Approval Date

COURSE PREREQUISITES AND TRANSFER CREDIT:

Prerequisites: Either a minimum grade of 65% in one of Foundations 11, Pre-Calculus 11, Applications 12, Principles 11, or MATH 080; **or** Foundations of Math 11 **and** 70% or higher in Foundations of Math 12; **or** Pre-Calculus 12; or Calculus 12; or minimum grade of 65% in both Statistics 12 **and** Computer Science_12.

Corequisites: None

Flexible Assessment (FA):

Credit can be awarded for this course through FA Yes No

Learners may request formal recognition for flexible assessment at the College of the Rockies through one or more of the following processes: External Evaluation, Worksite Assessment, Demonstration, Standardized Test, Self-assessment, Interview, Products/Portfolio, Challenge Exam. Contact an Education Advisor for more information.

Transfer Credit: For transfer information within British Columbia, Alberta and other institutions, please visit <http://www.cotr.bc.ca/Transfer>

Students should also contact an academic advisor at the institution where they want transfer credit.

Prior Course Number: N/A

Textbooks and Required Resources:

Textbook selection varies by instructor and may change from year to year. At the Course Outline Effective Date the following textbooks were in use:

Required: Goldstein, Schneider and Siegel (2017), *Finite Mathematics & Its Applications*, 12TH Edition, New Jersey: Pearson Prentice Hall

Optional: Goldstein, Schneider and Siegel (2017) *Student Solution Manual*, 12TH Edition, New Jersey: Pearson Prentice Hall

Please see the instructor's syllabus or check COTR's online text calculator <http://go.cotr.bc.ca/tuition/tCalc.asp> for a complete list of the currently required textbooks.

LEARNING OUTCOMES:

Upon the successful completion of this course, you will be able to

- employ a variety of formal problem solving methods and reflect on the usefulness of mathematics by reading about, interpreting and finding applications for the concepts studied;
- examine, strengthen and formalize your methods of approaching mathematical problem solving;
- be able to solve problems with and without the use of technology;
- solve systems of linear equations in any number of variables, using Gauss-Jordan elimination and matrix inverses;
- recognize dependent, inconsistent, and independent and consistent systems of equations;
- add, subtract, multiply, pivot and invert matrices;
- write, interpret, and solve matrix systems to represent input-output analysis problems;
- recognize the components of linear programming problems, and explain, using geometry, how the components all work together;
- find optimal solutions to linear programming problems using the Simplex method and Duality;
- utilize the laws of counting, question basic assumptions about numbers, use the language of sets, and be able to articulate and solve probability problems using these concepts;
- calculate the number of permutations, combinations and partitions of given objects, and understand the conceptual differences between these methods of counting;
- calculate probabilities & conditional probabilities;
- use tree diagrams and calculate conditional probabilities using Bayes' theorem;
- calculate and interpret very basic statistical data;
- identify, define characteristics of, and apply the Normal, Poisson, and Binomial probability distributions;
- understand the basic concepts of Markov Processes;
- find the stable distribution for both Regular and Absorbing Markov processes; and
- discover that math can be both enjoyable and useful! (optional, but strongly recommended).

COURSE TOPICS:

- Linear Equations and Systems of Linear Equations
- Simple Matrix Algebra
- Linear Programming, both geometric and using the Simplex method
- Marginal Analysis and Duality
- Set theory and Counting Techniques
- Probability
- A Brief Introduction to Statistics
- Regular and Absorbing Markov Processes

See instructor's syllabus for the detailed outline of weekly readings, activities and assignments.

EVALUATION AND ASSESSMENT (Face to Face Delivery and Online):

| Assignments | % Of Total Grade |
|-------------|------------------|
| Assignments | 20% |
| Midterms | 30% |
| Final Exam | <u>50%</u> |
| Total | 100% |

Please see the instructor's syllabus for specific classroom policies related to this course, such as details of evaluation, penalties for late assignments, and use of electronic aids.

EXAM POLICY:

Students must attend all required scheduled exams that make up a final grade at the appointed time and place.

Individual instructors may accommodate for illness or personal crisis. Additional accommodation will not be made unless a written request is sent to and approved by the appropriate Department Head prior to the scheduled exam.

Any student who misses a scheduled exam without approval will be given a grade of "0" for the exam.

COURSE GRADE:

Course grades are assigned as follows:

| Grade | A+ | A | A- | B+ | B | B- | C+ | C | C- | D | F |
|----------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Mark (Percent) | ≥ 90 | 89-85 | 84-80 | 79-76 | 75-72 | 71-68 | 67-64 | 63-60 | 59-55 | 54-50 | < 50 |

A grade of "D" grants credit, but may not be sufficient as a prerequisite for sequential courses.

ACADEMIC POLICIES:

See www.cotr.bc.ca/policies for general college policies related to course activities, including grade appeals, cheating and plagiarism.

COURSE CHANGES:

Information contained in course outlines is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational, employment, and marketing needs. The instructor will endeavour to provide notice of changes to students as soon as possible. The instructor reserves the right to add or delete material from courses.