# MATH-081 – Math – Advanced Level (Business/Technical Mathematics)

**College Preparation and Upgrading**

**Effective Term & Year:** Winter 2026
**Course Outline Review Date:** 2031-03-01

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**Program Area:** Upgrading for Academic and Career Entry

**Description:**

Advanced Business/Technical Mathematics provides students with practical applications that are useful in future vocational training, careers, or personal life. This course meets the math requirement for the Adult Dogwood Diploma. It also meets program admission requirements for some vocational and trades programs.

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**Program Information:**

Math 081 fulfills the math requirement for the BC Adult Graduation Diploma. No sequential courses are available.

**Delivery Methods:** Directed/Guided Studies

**Credit Type:** ABE Credits

**Credits:** 0

**Instructional Activity and Hours:**

| Activity | Hours |
|---|---|
| Classroom, Directed Studies or Online Instruction | 90 |
| Seminar/Tutorials | |
| Laboratory/Studio | |
| Practicum/Field Experience | |
| Co-op/Work Experience | |

| | |
|---|---|
| Other | |
| Total | 90 |

**Course Requisites:**

- Completed at least 1 of the following:
  - WPM 10 – Workplace Mathematics 10
  - FMP 10 – Foundations of Mathematics and Pre-Calculus 10
  - MATH072 – Mathematics Intermediate Level (Developmental)
  - MATH070 – Mathematics Intermediate Level (Algebraic)

**Prior Learning and Recognition:** Yes

Students are able to request formal recognition of their prior learning or experience outside the classroom. Challenge examination, portfolio-assisted assessment, work-based assessment or a combination of assessments that is appropriate to identify, assess, and recognize prior skills, competencies, and knowledge to achieve course credit. Tuition fees apply, refer to Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR) or contact an education advisor for more information.

**Course Transfer Credit:**

For information about receiving transfer credit for courses taken at either British Columbia or Alberta institutions, please see https://www.bctransferguide.ca/ or https://transferalberta.alberta.ca . For more transfer credit information, please visit https://www.cotr.bc.ca/Transfer

All requests for course transfer credit from institutions in British Columba or elsewhere should go to the College of the Rockies Enrolment Services office.

**Textbook Resources:**

Textbook selection varies by instructor and may change from year to year. At the Course Outline effective date the following textbook was in use:



Any additional resources are provided by the instructor through COTROnline or in the

classroom.

*Please see the instructor's syllabus or check COTR's online text calculator https://textbook.cotr.bc.ca/ for a complete list of the currently required textbooks.*

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**Learning Outcomes:**

**Upon the successful completion of this course, students will be able to:**

**1. Operations with Real Numbers**

It is expected that learners will be able to:

- add, subtract, multiply and divide rational numbers
- evaluate powers with rational bases and integer exponents
- demonstrate the order of operations with rational numbers
- evaluate radicals and distinguish between exact answers and approximate answers
- write numbers in scientific notation, convert from scientific notation to standard notation, and multiply and divide numbers expressed in scientific notation
- use a scientific calculator

**2. First-Degree Equations and Inequalities**

It is expected that learners will be able to:

- solve first-degree equations, in one variable, including those involving parentheses
- solve formulas for a given variable
- solve first-degree inequalities in one variable
- solve practical problems using a first-degree equation

**3. Equations and Their Graphs**

It is expected that learners will be able to:

- plot points on a coordinate system
- use ordered pairs to name points on the coordinate system
- determine whether a given point is a solution to an equation in two variables

OPTIONAL

- recognize and create any of the graphs of the following relations:
  - $y = ax + b$ (linear)
  - $y = ax^2 + bx + c$ (quadratic)
  - $y = a/x$ (reciprocal)
  - $y = a(bx)^{½}$ (square root)
  - $y = a(bx)^c$ (exponential) where a, b, c are real numbers

- given the graph of an equation, determine the following, where appropriate:
    - *x*– and *y*-intercepts
    - vertex
    - slope

## Optional Learning Outcomes

Learners must complete a minimum of three of the following:

### A. Systems of Equations

It is expected that learners will be able to:

- solve systems of linear equations in two variables graphically and/or algebraically
- solve practical problems

### B. Consumer Mathematics

It is expected that learners will be able to:

- solve consumer problems involving unit prices, wages earned in various situations, taxation, simple and compound interests, and exchange rates
- solve budget problems
- solve investment and credit problems involving interest

### C. Finance

It is expected that learners will be able to:

- solve problems involving compound interest
- find the effective interest rate
- solve annuity problems
- solve loan, mortgage and borrowing problems
- determine the finance charge on a loan

### D. Data Analysis I

It is expected that learners will be able to:

- determine the mean, median, mode and range from a set of data
- interpret and/or construct frequency tables, broken line graphs, bar graphs, histograms, stem-plots and other visual representations from a set of data
- design a simple statistical experiment, collect the data, analyze and communicate the results

### E. Data Analysis II

It is expected that learners will be able to:

- find quartiles and the percentile represented by a given data value
- calculate the standard deviation of a set of data using appropriate technology
- use z-scores to analyze normally distributed data

### F. Geometry

It is expected that learners will be able to:

- use any of the following angle properties to determine an angle in a drawing:
    - vertically opposite angles
    - corresponding angles, alternate interior angles, and angles on the same side of the transversal
    - angles on a line
    - angles on a point
    - complementary and supplementary angles
    - angle sum of a triangle
- classify triangles and quadrilaterals according to their sides and angles
- draw triangles given:
    - three sides
    - two sides and an included angle
    - two angles and a side
- draw quadrilaterals given various combinations of sides, angles, and diagonals

### G. Trigonometry

It is expected that learners will be able to:

- solve right triangles using one or more of
    - the sine ratio
    - the cosine ratio
    - the tangent ratio

    - the Pythagorean theorem

    - the angle sum property of triangles

- (optional) solve triangles using the Law of Sines (excluding the ambiguous case) and the Law of Cosines

**H. Measurement**

It is expected that learners will be able to:

- complete simple conversions
- solve problems involving composite figures, with reference to perimeter, area, volume and surface area
- calculate maximum and minimum values, using tolerances, for lengths, areas and volumes
- enlarge or reduce a dimensional object according to a specified scale

**I. Trades Option**

It is expected that learners will be able to solve applied problems (as related to a specific trade) using:

- unit conversions
- algebra
- geometry
- right triangle trigonometry
- ratio and proportion
- percentage

**J. Health Option**

It is expected that learners will be able to solve applied problems (as related to the health field) using:

- ratio and proportion
- unit conversion
- percentage

Material covered in this course is consistent with the articulated outcomes for ABE Advanced Level -Business/Technical Math as found in the 2025-2026 ABE Articulation Guide found here: Mathematics: Advanced Level—Business/Technical – A Guide to Upgrading in British Columbia’s Public Post-Secondary Institutions

https://www.bctransferguide.ca/transfer-options/adult-basic-education/

**Course Topics:**

**Core**

- Operations with Real Numbers
- First-Degree Equations and Inequalities
- Equations and their Graphs

**Optional Units** (Students must complete at least 3 of the following)

- Systems of Equations
- Consumer Mathematics
- Finance
- Data Analysis I
- Data Analysis II
- Geometry
- Trigonometry
- Measurement
- Trades Option
- Health Option

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

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## Evaluation and Assessments

**Assessment Type: Directed/Guided Studies**

| Assessment Type | % of Total Grade |
|---|---|
| Unit Tests | 100% |
| Total | 100% |

## Grade Scheme

| A+ | A | A- | B+ | B | B- | C+ | C | C- | D | F |
|---|---|---|---|---|---|---|---|---|---|---|
| >=95 | 94-90 | 89-85 | 84-80 | 79-75 | 74-70 | 69-65 | 64-60 | 59-55 | 54-50 | <50 |

**No pass requirements available.**

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

**Exam Attendance:**

Students must attend all scheduled exams at the appointed time and place. Instructors may approve an alternate exam to accommodate an illness or personal crisis. Department heads will consider other written requests. Any student who misses a scheduled exam without prior approval will receive a “0” on the exam.

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**Academic Policies:**

College of the Rockies policies related to courses can be found at https://cotr.bc.ca/about-us/college-policies/ and include the following:

- Policy 2.1.4 Course Audit
- Policy 2.4.1 Credential Framework
- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Rights, Responsibilities and Conduct
- Policy 2.4.8 Academic Performance
- Policy 2.4.9 Student Feedback and Concerns
- Policy 2.4.11 Storage of Academic Works
- Policy 2.5.3 Student Appeal
- Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR)

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**Course Changes:**

The College of the Rockies updates course outlines regularly to meet changing educational, employment and marketing needs. The instructor will notify students in writing of any updates to this outline during the semester. The instructor reserves the right to revise, add or delete material while meeting the learning outcomes of this course outline.