



MCV4U – Grade 12 Calculus and Vectors

Course Profile & Evaluation

Course Description/Rationale/Overview

This course builds on students' previous experience with functions and their developing understanding of rates of change. Students will solve problems involving geometric and algebraic representations of vectors and representations of lines and planes in three-dimensional space; broaden their understanding of rates of change to include the derivatives of polynomial, sinusoidal, exponential, rational, and radical functions; and apply these concepts and skills to the modeling of real-world relationships. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended for students who choose to pursue careers in fields such as science, engineering, economics, and some areas of business, including those students who will be required to take a university-level calculus, linear algebra, or physics course.

Prerequisite: Advanced Functions, MHF4U (can be taken concurrently with Advanced Functions)

Class Requirements

Student Responsibility

Students must seek assistance from the teacher and fellow students for all work missed due to meeting online requirements and must make arrangements to complete missed work.

Online/Offline Responsibility

Students are responsible for completing all online and offline work assigned through the Moodle.

Course Requirements/Department Policies

Late Assignments

Late assignments must be accompanied with a note signed by a parent or guardian stating the reason for tardiness of the assignment. The note must list the due date of the assignment and the actual date of submission.

If an assignment is handed in after it has been taken up/handed back, the student may not receive a mark for it.

Missed Tests

It is the student's responsibility to make arrangements, ahead of time, for any tests/quizzes that are missed. If a student misses a test/quiz for an unforeseen reason such as illness, the student must bring a note signed by a parent or guardian and be prepared to write the test/quiz immediately upon return to school.

Evaluation

Assignments, quizzes, tests and final examination

Curriculum Strands

1. Structure and Properties of Matter
2. Organic Chemistry
3. Energy Changes and Rates of Reaction
4. Chemical Systems and Equilibrium
5. Electrochemistry (ISU)

Achievement Categories

- Knowledge & Understanding 25%
- Thinking & Inquiry 25%
- Communication 25%
- Application 25%

Learning Skills

- Initiative
- Work Habits/Homework
- Organization
- Works Independently
- Teamwork

Evaluation

Assignments and Projects	42 % (approximately)
Quizzes and Tests	28 % (approximately)
Final Evaluation	30 %

FINAL MARK

Term Work:	70%
Summative Evaluation	30%

Resources

Textbook

Calculus and Vectors (McGraw Hill)

Supplementary Teaching Materials

Worksheets organized by teacher and other online resources.



SCH4U – Grade 12 Chemistry

Course Profile & Evaluation

Course Outline

A. Rate of Change

By the end of this course, students will:

1. demonstrate an understanding of rate of change by making connections between average rate of change over an interval and instantaneous rate of change at a point, using the slopes of secants and tangents and the concept of the limit;
2. Graph the derivatives of polynomial, sinusoidal, and exponential functions, and make connections between the numeric, graphical, and algebraic representations of a function and its derivative;
3. Verify graphically and algebraically the rules for determining derivatives; apply these rules to determine the derivatives of polynomial, sinusoidal, exponential, rational, and radical functions, and simple combinations of functions; and solve related problems.

B. Derivatives and their Applications

By the end of this course, students will:

1. Make connections, graphically and algebraically, between the key features of a function and its first and second derivatives, and use the connections in curve sketching;
2. Solve problems, including optimization problems, that require the use of the concepts and procedures associated with the derivative, including problems arising from real-world applications and involving the development of mathematical models.

C. Geometry and Algebra of Vectors

By the end of this course, students will:

1. Demonstrate an understanding of vectors in two-space and three-space by representing them algebraically and geometrically and by recognizing their applications;
2. Perform operations on vectors in two-space and three-space, and use the properties of these operations to solve problems, including those arising from real-world applications;
3. Distinguish between the geometric representations of a single linear equation or a system of two linear equations in two-space and three-space, and determine different geometric configurations of lines and planes in three-space;
4. Represent lines and planes using scalar, vector, and parametric equations, and solve problems involving distances and intersections.