

Course Outline: Calculus & Vectors University Preparation – MCV4U

Course Description

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 modelling of real-world relationships. Students will also refine their use of 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) must be taken prior to or concurrently with Calculus & Vectors (MCV4U).

Units of Study

This course will consist of two distinct sections of study, hence the name: *CALCULUS* and *VECTORS*. There are 8 units of study in total. We will alternate from Vectors to Calculus and back.

A – Vectors

1. Introduction to Vectors – Geometric & Algebraic
2. Operations with Vectors
3. Lines and Planes

B – Calculus

4. Introduction to Calculus & Derivatives
5. Graphing Applications
6. Optimization and Related Rates
7. Derivatives of Exponential and Logarithmic Functions
8. Derivatives of Trigonometric Functions

Evaluation

Term Work – 70% of Final Mark

Tests – 55 %

Assignments/Quizzes – 15%

Summative Exam – 30% of Final Mark

All evaluations will reflect requirements for students to demonstrate competence in the **four learning categories**: knowledge and understanding (35%) : application (35%), thinking, inquiry and problem solving (20%) and communication (10%).

Textbook

There are 2 textbooks required for this course (one for Vectors and one for Calculus).

Classroom Expectations

1. You are here to learn.
2. Come to class prepared with: **a scientific calculator, pencil, paper and your textbook.**
3. It is expected that you do your homework and make good use of time in class in order to be successful.

Late Assignment Policy

You will complete approximately one assignment per unit. All **assignments** are due at the **beginning of class** on the due date. If you do not hand in an assignment due to a legitimate absence, **you must hand it in on your first day back at school.**

- Once the assignment has been taken up in class or solutions have been posted, no late assignments will be accepted. (Sometimes the solutions are posted as soon as the assignment has been collected).
- Certain due dates (i.e. final exams, culminating tasks, and some unit summative) may be non-negotiable

It is strongly recommended that assignments are completed prior to a unit test regardless of the due date.

Plagiarism

Mathematical plagiarism is the **unacknowledged** use of someone else's mathematical discovery or solution. Plagiarism could include:

- Copying another student's solution
- Working with another student without acknowledging their contribution.

You may have the opportunity to work with other students in various assignments in this course, but it is important that you acknowledge their help, whether separate assignments are submitted or not. No credit will be given for assignments that contain mathematical plagiarism.

Course Website

This class has a website. It is at https://sdss.bwdsb.on.ca/staff/teacher_sites/josh_elliott/MCV4U

Extra Help

I am in the "study lab" (room 208) Monday at 11:40AM. You make arrangements for help at other times. My office is in room 212 and I'm usually there period 4 (my prep)

Contact Information

The best way to contact me is by email at **Josh_Elliott@bwdsb.on.ca**