



## Cawthra Park Secondary School Mathematics Department Calculus and Vectors, Grade 12 University Mathematics Course Overview

**COURSE CODE:** MCV4U  
**PREREQUISITE:** MHF4U

**ACTING HEAD:** J. Garvin  
**CREDITS:** One

### GOALS OF THE MATHEMATICS PROGRAM

1. To develop and extend numeracy and algebraic skills.
2. To analyze and apply appropriate strategies to solve both familiar and unfamiliar problems.
3. Use appropriate mathematical conventions to effectively communicate solutions to problems.

### 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 modelling of real-world relationships. Students will 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.

### COURSE STRANDS

Rates of Change      Derivatives and Their Applications      Geometric and Algebraic Vectors

### ASSESSMENT AND EVALUATION

Evaluation in this course may be diagnostic, formative, or summative. A student's final mark is made of two parts:

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|--|------|
| 1. Term Evaluation   | 70 % |
| 2. Final Evaluation (15% In-Class Component, 15% Final Exam) | 30 % |

Teachers use their **professional judgment** to determine a final mark, based on the following four categories:

1. Knowledge and Understanding: Subject-specific content acquired in the course (knowledge), and the comprehension of its meaning and significance (understanding).
2. Application: The use of knowledge and skills to make connections within and between various contexts.
3. Thinking: The use of critical and creative thinking skills and/or processes.
4. Communication: The conveying of meaning through various forms.

Students' **learning skills** and **work habits**, including timely completion of homework and assignments, attendance and punctuality, collaborative work, and responsible student behaviour, will also be assessed on an ongoing basis.

### USE OF PERSONAL DIGITAL DEVICES

**With teacher approval**, devices may be placed on desks, in silent mode, and used discreetly during class time for class-related work, time-management and planning, or other academic uses. Inappropriate use of digital devices may result in this courtesy being revoked.

### ADDITIONAL INFORMATION

Cawthra Park can be a very busy place. Students should establish deadlines and assessment dates with their teachers in advance, when possible. Daily attendance is essential in mathematics, due to its cumulative nature. Plagiarism, including misrepresentation of original work, cheating, theft of evaluation instruments, use of unauthorized aids, and false representation of identity, will result in appropriate consequences. Please refer to the Student Handbook under the "About Us" section of the Cawthra Park website (<http://www.cawthrapark.com>) for more details on assessment and evaluation policies.