

RICHVIEW COLLEGIATE INSTITUTE

PROGRAM AREA: Mathematics	COURSE NAME: Calculus and Vectors
COURSE CODE: MCV 4U	GRADE/LEVEL: 12
PREREQUISITE: MCR 3U	CREDIT VALUE: 1.0

Cost of Textbook/equipment replacement: _____ \$85 _____ Additional Course Costs: _____
(if lost or damaged)

Textbooks(s)/Resources:
Calculus and Vectors, Nelson

COURSE DESCRIPTION:

This course builds on the 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 3-D.

Rates of change include the derivatives of polynomial, sinusoidal, exponential, logarithmic, rational and radical functions. These rates are concepts and skills are applied to real-world relationships.

CURRICULUM STRANDS (UNITS) and OVERALL EXPECTATIONS:

Rate of Change

- Demonstrate an understanding of rate of change by connecting average and instantaneous rates, using slopes and limits
- Graph derivatives of various functions
- Verify graphically the rules for determining derivatives
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Derivatives and Applications

- Make connections graphically and algebraically between key features of a function and its first and second derivatives.
- Use the connections to curve sketch. solve problems, including optimization

Geometry and Algebra of Vectors

- demonstrate an understanding of vectors in two-space and three-space, geometrically and algebraically
- perform operations with vectors
- distinguish between geometric representations of a single linear equation or system in two-space or in three-space
- represent lines and planes using scalar, vector and parametric equations. Solve problems involving distances and intersections.

CURRICULUM STRANDS (UNITS) and OVERALL EXPECTATIONS: (continued)

Throughout the course, students shall

- **Problem Solve**
- **Reason and Prove**
- **Reflect**
- **Select Tools and Computational Strategies**
- **Connect (Make connections among mathematical concepts and procedures)**
- **Represent (Create a variety of representations of mathematical ideas)**
- **Communicate (Orally, visually and in writing)**

Assessment and Evaluation

Assessment and Evaluation are based on the expectations and levels of achievement outlined in the provincial curriculum document for each subject. A wide range of assessment and evaluation opportunities allows students to demonstrate their learning in a variety of ways. This information provides the basis for reporting student grades on the Provincial Report Card. A final mark will be calculated using the following categories or strands.

Formative Evaluation: (70% of the final mark will be based on evaluations conducted throughout the course)

All four achievement categories/strands do not need to be evaluated in each evaluation task.

Communication (20%)	Knowledge/Understanding (30%)	Thinking and Inquiry (20%)	Application/Making Connections (30%)
<i>Tests/quizzes/assignments Journal entries Presentations/reports Mathematical conventions/terminology</i>	<i>Tests/quizzes/assignments reports</i>	<i>Tests/assignments Mathematical conventions</i>	<i>Tests/assignments Reports Mathematical conventions</i>

Summative Evaluation: (30% of the final mark will be based on a final evaluation in the form of culminating activities).

Components of Summative Evaluation: Exam (30%)

All 4 categories (communication, knowledge, TIPS, and applications) will be represented on the exam.

*** A detailed explanation of the culminating activity/activities will be distributed to students in the class.*

No student is exempt from the final exam.

Summer school may be available to students who achieve between 35% and 49%.

Learning Skills: The report card provides a record of the learning skills, demonstrated by the student in every course in the following six categories: Responsibility, Independent Work, Initiative, Organization, Collaboration, Self-Regulations. The learning skills are evaluated using a four-point scale (E-Excellent, G-Good, S-Satisfactory, N -Needs Improvement).

Please refer to the Student Agenda Planner for details regarding the Achievement Chart and Learning Skills.