


**MCV4U-A**



**Calculus and Vectors**

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# Course Description

Welcome to Calculus and Vectors MCV4U-A.

This course builds on your previous experience with functions and your developing understanding of rates of change. You will solve problems involving geometric and algebraic representations of vectors and representations of lines and planes in three-dimensional space, broaden your 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. You will also refine your 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 a physics course.

## Materials

You are required to submit your coursework online in My ILC by using Microsoft® Word and Microsoft Equation Editor 3.0 software (or software such as OpenOffice.org WRITER and OpenOffice.org MATH), in this course.

## Expectations

The expectations listed in this course describe the knowledge and skills that you are expected to develop and demonstrate. The overall expectations you will cover in each unit are listed on the second page of the unit. Specific expectations are listed at the beginning of each lesson under the heading “What You Will Learn.”

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# Evaluation

In each lesson, there are Support Questions and Key Questions.



**Support Questions**  
(do not send in for evaluation)



Support Questions will provide you with an opportunity to assess your understanding and mastery of the ideas and skills you are learning in the course. They will also help you to improve the way in which you communicate your ideas. Many of the Support Questions will prepare you to answer the Key Questions.

**Do not send your answers to ILC to be marked.** Suggested Answers to Support Questions are provided so that you can check your work.



**Key Questions**



The Key Questions are used to evaluate your achievement of each unit's expectations. Your answers will show how well you have understood the ideas and mastered the skills in the unit, and how well you can communicate your ideas.

You must complete all of the Key Questions successfully in order to pass each unit. When you have completed all the lessons in a unit, submit the answers for that unit to ILC for marking. Remember to label your answers clearly with the correct unit, lesson, and question numbers. You are required to submit your answers to Key Questions online in My ILC by using Microsoft® Word and Microsoft® Equation Editor 3.0 software (or software such as OpenOffice.org WRITER and OpenOffice.org MATH), in this course.

## Evaluation Tools

There are detailed mark allocations for each Key Question. They can be used to help you determine how extensive your answer should be when you complete your Key Questions.

# Submitting Your Coursework

After you have completed the work for a unit, submit it to ILC for evaluation. Make sure that you include all the required answers to all Key Questions in the unit. You must also complete the Reflection.

For each unit, an ILC teacher will evaluate your work. The teacher will write comments, giving you feedback to help you improve your work.

## Reflection

As you work through each unit, think carefully about what you are doing. Use the Reflection to make comments, express feelings, and give opinions about your learning and about the course. The more you think about and reflect on what you are doing, the better you will learn. This also provides important feedback for the teacher. You must complete it before proceeding.

# What You Must Do to Earn a Credit

In order to receive a credit for this course, you must

- successfully complete most Key Questions for each unit
- complete the Reflection for each unit
- pass the Final Test (50% or over)

You will receive a mark out of 100 for each unit and for the Final Test. Your course mark will also be out of 100.

## Weighting

Coursework	Weight (%)
Unit 1	17.5%
Unit 2	17.5%
Unit 3	17.5%
Unit 4	17.5%
Final Test	30%
<b>Total</b>	<b>100%</b>

You must receive a passing mark for each unit before starting the next unit. If you do not receive a passing mark on any unit, the teacher will ask you to redo and resubmit the unit. The teacher will give you suggestions to help you pass the next time.

## Final Test

Every ILC credit course has a Final Test. After you have successfully completed the last unit of this course, you will receive information about writing the test.

You can have two opportunities to pass the Final Test. No matter how well you do on the unit work, if you do not pass the Final Test, you will not get a credit for the course.

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- Lesson 5: Properties of the Derivative
- Suggested Answers to Support Questions

## Unit 2: Exploring Derivatives

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- Lesson 7: The Derivatives of Sinusoidal and Rational Functions
- Lesson 8: The Second Derivative: A Graphical Look
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