



St. Paul Catholic High School
Calculus and Vectors
MCV 4U
2018-2019

Teacher

Mrs. C. Bartlett

Prerequisite Course

MHF 4U

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 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.

Overall Course Expectations or Topics

In this course, students will:

- ✓ Review and further explore the properties of instantaneous and average rates of change
- ✓ Investigate and interpret the graphical definition of derivatives
- ✓ Apply the derivative to make detailed sketches of the graphs of various functions
- ✓ Solve a variety of problems using the techniques of differential calculus
- ✓ Investigate vectors in two-space and three-space
- ✓ Investigate lines and planes in two-space and three-space

Course Resources

Text: *Calculus and Vectors*, Kirkpatrick, Crippin et al; Nelson, 2008

On-Line Textbook: See back of textbook

Technology: Graphing Calculator, Desmos. Geogebra

Website: Mrs. Bartlett: <http://bartlettstp.weebly.com>

Required Materials to meet with success in this course

Paper, graph paper, pencil, pen, ruler calculator (graphing capabilities permitted)

Core Content and Sequence

	# Classes
PART I: RATES OF CHANGE AND THE DERIVATIVE	27
1. Introduction to Calculus	
2. The Derivative	
3. Derivatives of Exponential and Trigonometric Functions	
PART II: DERIVATIVES AND THEIR APPLICATIONS	21
4. Using Derivatives to Sketch Curves	
5. Using Derivatives to Solve Problems	
PART III: GEOMETRY AND ALGEBRA OF VECTORS	30
6. Representing Vectors	
7. Representing Lines and Planes	

Make-Up Test Opportunities – April 11, 2019 and June 12, 2019

Any student who has an approved absence on the day of a test will have an opportunity to write a multiple choice Make-Up test for that unit during one of two “Make-Up” days:

Prior to Midterm Reporting: Thursday, April 11, 2019

Prior to Final Exams: Wednesday, June 12, 2019

Students who have been present for all tests may choose to write a Make-Up test for one unit in order to replace the lowest mark.

Report Card Grade

The Report Card grade is based on evidence collected through observations, conversations, and student products (tests/exams, assignments for evaluation).

Some evidence will carry greater weight than other evidence. Determining a report card grade will involve professional judgement and interpretation of evidence that reflects the student’s most consistent level of achievement, with special consideration given to more recent evidence.

Mark Breakdown

Term Work - 70 %

Term work is based on a variety of performance tasks over the course of the term that demonstrates: knowledge, thinking, communication, and application.

Summative - 30% (Final exam will be written during exam week)

The summative evaluation must take place completely in class and will take the form of a final exam that demonstrates the comprehensive achievement of the overall course expectations and the four areas of the achievement chart (knowledge, thinking, communication, and application).

