Fairfield Ludlowe High School - Fairfield Warde High School

MULTIVARIABLE CALCULUS

Insert Teacher Name | Insert Room Number

Insert Full Year/Semester | Insert Period

Insert Email Address

COURSE DESCRIPTION

Multivariable Calculus is a rigorous second year course in college level calculus. This course provides an in-depth study of vectors and the calculus of several variables for the student who has successfully completed AP Calculus. The successful student will bring to the course a solid understanding of the concepts of first-year calculus as well as the ability to approach complex problems and applications with insight, imagination, and persistence. The critical areas of focus for this course are:

1) The dot product and cross product of vectors are given geometric definitions, motivated by work and torque, before the algebraic expressions are deduced. To facilitate the discussion of surfaces, functions of two variables and their graphs are introduced.
2) The calculus of vector functions is used to provide Kepler's First Law of planetary motion. In keeping with the introduction of parametric curves as introduced in prior courses, parametric surfaces are introduced, thus allowing for a discussion of tangent planes and areas of parametric surfaces.
3) Functions of two or more variables are studied from verbal, numerical, visual, and algebraic points of view. Directional derivatives are estimated from contour maps of temperature, pressure, and snowfall.
4) Contour maps and the Midpoint Rule are used to estimate the average snowfall and average temperature in given regions. Double and triple integrals are used to compute probabilities, areas of parametric surfaces, volumes of hyper spheres, and the volume of intersection of three cylinders.

COURSE OBJECTIVES

Students should:

- understand and describe patterns and functional relationships.
- represent and analyze quantitative relationships in a variety of ways.
- use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.
- use spatial reasoning, location and geometric relationships to solve problems.
- develop and apply units, systems, formulas and appropriate tools to estimate and measure.

UNITS OF STUDY

- Vectors and the Geometry of Space
- Vector Functions
- Partial Derivatives
- Multiple Integrals

COURSE POLICIES AND REQUIREMENTS

GRADING

Summative Assessments:	Insert % Here (Minimum of 70%). Insert Categories/Weighting (ie. Papers – 30%)
Formative Assessments:	Insert % Here (Maximum of 30%). Insert Categories/Weighting (ie. Quizzes – 50%)
Behavioral Characteristics:	Insert % Here (Maximum of 10%) Insert Categories/Weighting (ie. Particip. - 90%)

Insert Additional Grading Information Here

MATERIALS

Insert Course Materials Here (ie. Textbook, Binder, Calculator, Highlighters)

EXPECTATIONS OF STUDENTS

Insert Course Expectations Here

EXTRA HELP

Insert Course Expectations Here

Insert Additional Information Here