

HPISD Curriculum: Multivariable Calculus						
Title		Estimated Duration	6 Weeks			
Unit 5: Line Integrals		6 weeks		3	4	5
Unit Overview						
The students will be able to analyze and work with Line Integrals						
Enduring Understandings						
The student will understand that:	Calculus can be used in 3-Dimensional Space; with respect to Line Integrals					
Concepts	Guiding/Essential Questions					
	How do you take a limit in 3-D space? What does a partial derivative look like? What does chain rule look like in 3-D space?					
Learning Targets						
In 3-Dimensional Space Students will be able to: <ul style="list-style-type: none"> • Understand the concept of a vector field. • Understand Line Integrals with respect to arc length. • Understand Line Integrals with Respect to x, y, and/or z. • Understand Line Integrals of vector fields. • Understand the fundamental theorem of calculus for line integrals of vector fields. • Understand conservative vector fields and how to find potential functions. • Solve applications of Green's Theorem. • Understand the concepts of the curl and the divergence of a vector field. 						
Formative Assessments			Summative Assessments			
Homework, Quizzes			Tests and Projects			

Processes and Skills:		Facts:	
What students should be able to DO		What students should KNOW	
<ul style="list-style-type: none"> Solve vector field problems. Solve Line Integrals with respect to arc length. Solve Line Integrals with Respect to x, y, and/or z. Solve Line Integrals of vector fields. Solve Line Integrals of vector fields using the Fundamental Theorem of Calculus. Find potential functions using conservative vector fields. Solve applications of Green's Theorem. Solve problems using the concepts of the curl and the divergence of a vector field. 		<ul style="list-style-type: none"> Understand the concept of a vector fields. Understand Line Integrals with respect to arc length. Understand Line Integrals with Respect to x, y, and/or z. Understand Line Integrals of vector fields. Understand the fundamental theorem of calculus for line integrals of vector fields. Understand conservative vector fields Understand applications of Green's Theorem. Understand the concepts of the curl and the divergence of a vector field. 	
Topics			
vector fields	fundamental theorem for line integrals	Green's Theorem	
line integrals	conservative vector fields	curl and divergence	
line Integrals of vector fields			
Language of Instruction			
derivative	line integral	divergence	
integral	curl		
vector field			
Resources			
Calculus Textbook: Anton			