

Catalog Description:

Introduces single variable calculus and analytic geometry. Includes limits, continuity, derivatives, and applications of derivatives as well as indefinite and definite integrals. Trigonometric functions are included. **5 semester credit hours.**

Prerequisites:

"C" or better in MAT 121 College Algebra and MAT 122 College Trigonometry, 80 or above on Accuplacer College Math Test.

TEXT: CALCULUS. Stewart, James. Brooks/Cole Cengage Learning. 7th Edition. 2012.

Classes (50 minutes)

CHAPTER 1 - FUNCTIONS AND LIMITS

1.1	Four Ways to Represent a Function	1
1.2	Mathematical Models.	2
1.3	New Functions from Old Functions.	1
1.4	The Tangent and Velocity Problems.	1
1.5	The Limit of a Function.	2
1.6	Calculating Limits Using the Limit Laws.	2
1.7	The Precise Definition of a Limit.	2
1.8	Continuity.	1
	Review.	1
	TEST 1 – Chapter 1.	1

CHAPTER 2 - DERIVATIVES

2.1	Derivatives and Rates of Change.	2
2.2	The Derivative as a Function.	2
2.3	Differentiation Formulas.	2
2.4	Derivatives of Trigonometric Functions.	3
2.5	The Chain Rule.	2
2.6	Implicit Differentiation.	2
2.7	Rates of Change in the Natural and Social Sciences.	1
2.8	Related Rates.	1
2.9	Linear Approximations and Differentials.	1(optional)
	Review.	1
	TEST 2 – Chapter 2.	1

CHAPTER 3 - APPLICATIONS OF DIFFERENTIATION

3.1	Maximum and Minimum Values.	2
3.2	The Mean Value Theorem.	1
3.3	How Derivatives Affect the Shape of a Graph.	3
3.4	Limits at Infinity; Horizontal Asymptotes.	2
3.5	Summary of Curve Sketching.	2
	Practice graphing.	1
	TEST 3A Sections 3.1-3.5 (Take-Home)	
3.6	Graphing with Calculus and Calculators (optional)	1
3.7	Optimization Problems.	3
3.8	Newton’s Method.	1(optional)
	Review.	1
	TEST 3B – Chapter 3.	1

CHAPTER 4 – INTEGRALS

3.9	Antiderivatives.	1
4.1	Areas and Distances.	1
4.2	The Definite Integral.	2
4.3	The Fundamental Theorem of Calculus.	2
4.4	Indefinite Integrals and the Net Change Theorem.	1
4.5	The Substitution Rule.	2
	Review.	1
	TEST 4 – Chapter 4.	1

CHAPTER 5 - APPLICATIONS OF INTEGRATION

5.1	Areas between Curves.	2
5.2	Volumes.	2
5.3	Volumes by Cylindrical Shells.	1
5.4	Work.	1
5.5	Average Value of a Function.	1
	Review for Final.	2

FINAL EXAM – Chapter 5 and Comprehensive

Instruction days	59
Review days	6
Test days (not including Final)	4
(extra days)	<u>6</u>
	75