

**Math 156 Calculus II****Credit Hours:** 4**Scheduled hours per week**

Lecture: 4

Lab: 0

Other: 0

**Catalog Course Description:** Continuation of Math 155. Derivatives and integrals of logarithmic, exponential, and trigonometric functions. Techniques of integration, polar coordinates, series.**Pre-requisites:** C or better in Math 155**Co-requisites:** None.**Course Learning Outcomes:**

- A. Students will demonstrate ability to differentiate logarithmic, exponential, and trigonometric functions.
- B. Students will demonstrate ability to use techniques of integration.
- C. Students will demonstrate knowledge and ability to use polar coordinates.
- D. Students will demonstrate ability to work with indeterminate forms.
- E. Students will demonstrate ability to work with improper integrals.
- F. Students will demonstrate ability to work with infinite series.
- G. Students will demonstrate ability to work with various applications.

**Topics to be studied:**

Differentiation of the following functions:

Exponential

Logarithmic

Inverse trigonometric

Hyperbolic

Series

Integral test

Comparison test

Alternating series

Ratio and root tests

Power series

Exponential growth and decay

Taylor and Maclaurin series

Indeterminate forms

L'Hospital's rule

Integration by parts

Trigonometric integrals

Trigonometric substitution

Integration by partial fractions

Approximate integration

Improper integrals

Arc length

Area of a surface

Polar coordinates

Sequences

**Relationship of Course to Program or Discipline Learning Outcomes:**

(What program outcomes are being met by this course?)

For general education courses, a listing of the general education competencies that are met.)

<b>Relationship of Course to Mathematics (MATH) Student Learning Outcomes:</b>	
<b>Demonstrate understanding</b> of the language of mathematics, by their use of symbols, definitions, word phrases, and representations.	X
<b>Display proficiency</b> in mathematical computations.	X
<b>Implement mathematical techniques</b> to solve applied problems.	X
<b>Employ appropriate technology</b> to demonstrate knowledge of mathematical concepts.	X
<b>Exhibit mastery</b> of core course competencies.	X
<b>10/20/2017</b>	

<b>Relationship of Course to General Education Learning Outcomes:</b>	
<b>Composition and Rhetoric</b> Students illustrate a fundamental understanding of the best practices of communicating in English and meet the writing standards of their college or program-based communication requirements.	
<b>Science &amp; Technology</b> Students successfully apply systematic methods of analysis to the natural and physical world, understand scientific knowledge as empirical, and refer to data as a basis for conclusions.	
<b>Mathematics &amp; Quantitative Skills</b> Students effectively use quantitative techniques and the practical application of numerical, symbolic, or spatial concepts.	X
<b>Society, Diversity, &amp; Connections</b> Students demonstrate understanding of and a logical ability to successfully analyze human behavior, societal and political organization, or communication.	
<b>Human Inquiry &amp; the Past</b> Students interpret historical events or philosophical perspectives by identifying patterns, applying analytical reasoning, employing methods of critical inquiry, or expanding problem-solving skills.	
<b>The Arts &amp; Creativity</b> Students successfully articulate and apply methods and principles of critical and creative inquiry to the production or analysis of works of art.	
<b>10/20/2017</b>	

**Special requirements of the course:** None**Additional information:** None**Prepared by:** Thomas Riddle**Date:** 10/20/2017