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.)

| Relationship of Course to Mathematics (MATH) Student Learning Outcomes: |
|---------------------------------------------------------------|-------|
| Demonstrate understanding of the language of mathematics, by their use of symbols, definitions, word phrases, and representations. | x |
| Display proficiency in mathematical computations. | x |
| Implement mathematical techniques to solve applied problems. | x |
| Employ appropriate technology to demonstrate knowledge of mathematical concepts. | x |
| Exhibit mastery of core course competencies. | x |
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| Relationship of Course to General Education Learning Outcomes: |
|---------------------------------------------------------------|-------|
| Composition and Rhetoric 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. | |
| Science & Technology 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. | |
| Mathematics & Quantitative Skills Students effectively use quantitative techniques and the practical application of numerical, symbolic, or spatial concepts. | x |
| Society, Diversity, & Connections Students demonstrate understanding of and a logical ability to successfully analyze human behavior, societal and political organization, or communication. | |
| Human Inquiry & the Past Students interpret historical events or philosophical perspectives by identifying patterns, applying analytical reasoning, employing methods of critical inquiry, or expanding problem-solving skills. | |
| The Arts & Creativity Students successfully articulate and apply methods and principles of critical and creative inquiry to the production or analysis of works of art. | |
| 10/20/2017 |

Special requirements of the course: None

Additional information: None

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