I. MTH 126 Calculus II - 4 Semester Hours

II. Course Description

This is the second of three courses in the basic calculus sequence. Topics include vectors in the plane and in space, lines and planes in space, applications of integration (such as volume, arc length, work and average value), techniques of integration, infinite series, polar coordinates, and parametric equations.

III. Prerequisite

C or higher in MTH 125 or equivalent.

IV. Textbook

Due to the varied selection of quality college level textbooks, each college will select the textbook needed to meet the requirements of this course.

V. Course Objectives

The objective of this course is to provide an understanding of concepts, develop competent skills, and demonstrate applications in the following areas:

1. Applications of integration
2. Specialized integration techniques
3. Infinite series
4. Polar and parametric representations
5. Vectors

This course seeks to build upon the experiences and knowledge from Calculus I while preparing students for Calculus III.
VI. Course Outline of Topics

A. This course shall include the following topics as a minimum.
   1. Application of Integration
      a. Area of region between two curves
      b. Volumes of solids of revolution
      c. Arc length
      d. Work
      e. Fluid pressure
   2. Techniques Integration
      a. Integration by parts
      b. Trigonometric integrals
      c. Trigonometric substitution
      d. Partial fractions
   3. Indeterminate forms and L’Hospital’s Rules
   4. Improper integrals
   5. Sequences
   6. Convergence of divergence of infinite series
      a. Series and convergence
      b. The integral test and p-series
      c. Comparisons of series
      d. Alternating series
      e. The ratio and root tests
   7. Power series
   8. Taylor, Maclaurin series and Binomial series
   9. Parametric equations
  10. Polar coordinates and polar graphs
  11. Area and arc length in polar coordinates
  12. Vectors in the plane and space
  13. Operations with vectors
  14. Lines and planes in space

B. Optional topics may include the following.
   1. Moments, center of mass, and centroids
   2. Conics
VII. Evaluation and Assessment

Evaluation and assessment techniques may include any or all of the following.

Exams
Projects
Homework
Computer assignment
Participation

Grades will be given based upon A = 90 – 100%, B = 80 – 89%, C = 70 – 79%, D = 60 – 69%, and F = below 60%.

VIII. Attendance

Students are expected to attend all classes for which they are registered. Students who are unable to attend class regularly, regardless of the reason or circumstance, should withdraw from that class before poor attendance interferes with the student’s ability to achieve the objectives required in the course. Withdrawal from class can affect eligibility for federal financial aid.

IX. Statement on Discrimination/Harassment

The College and the Alabama State Board of Education are committed to providing both employment and educational environments free of harassment or discrimination related to an individual’s race, color, gender, religion, national origin, age, or disability. Such harassment is a violation of State Board of Education policy. Any practice or behavior that constitutes harassment or discrimination will not be tolerated.

X. Americans with Disabilities

The Rehabilitation Act of 1973 (Section 504) and the Americans with Disabilities Act of 1990 state that qualified students with disabilities who meet the essential functions and academic requirements are entitled to reasonable accommodations. It is the student’s responsibility to provide appropriate disability documentation to the College.