MATH 143 Calculus II (4 hours)

Catalog Description: Symbolic and numerical techniques of integration, improper integrals, applications using the definite integral, sequences and series, power series, Taylor series, differential equations. Fall, spring and summer.

Prerequisite: A grade of C- or better in MATH 142. 1818 Advanced College Credit

Technology: A graphing calculator with a TI 83/84 being the calculator of choice is required. In addition, Computer software may be used for some of the topics.


Syllabus:

Chapter 7 Integration
   7.1 Integration by substitution
   7.2 Integration by parts
   7.3 Tables of integrals
   7.4 Algebraic identities and trigonometric substitutions
   7.5 Numerical methods for definite integrals
   7.6 Improper integrals
   7.7 Comparison of improper integrals

Chapter 8 Using the Definite Integral
   8.1 Areas and volumes
   8.2 Applications to geometry
   8.3 Area and arc length in polar coordinates
   8.4 Density and center of mass [see note (a) at end of syllabus]
   8.5 Applications to physics [see note (a) at end of syllabus]
   8.6 Applications to economics [see note (a) at end of syllabus]
   8.7 Distribution functions [see note (a) at end of syllabus]
   8.8 Probability, mean, and median [see note (a) at end of syllabus]

Chapter 9 Sequences and Series
   9.1 Sequences
   9.2 Geometric series
   9.3 Convergence of series
   9.4 Tests for convergence
   9.5 Power series and interval of convergence
Chapter 10 Approximating Functions using Series
  10.1 Taylor polynomials
  10.2 Taylor series
  10.3 Finding and using Taylor series
  10.4 The error in Taylor polynomial approximations
  10.5 Fourier series [see note (b) at end of syllabus]

Chapter 11 Differential Equations
  11.1 What is a differential equation?
  11.2 Slope fields
  11.3 Euler’s method
  11.4 Separation of variables
  11.5 Growth and decay
  11.6 Applications and modeling
  11.7 The Logistic Model [see note (b) at end of syllabus]

Notes:

a) Do three of the five sections 8.4–8.8. Choose sections that you feel will be most valuable to your class. Also, note that sections 8.7 and 8.8 build on each other offering more depth than either of the sections alone.

b) Cover this material only if time permits.