DELAWARE TECHNICAL & COMMUNITY COLLEGE
COLLEGEWIDE COURSE SYLLABUS

Campus:	Terry
Department:	Mathematics
Course Number and Title:	MAT 282 – Calculus II
Instructor Name:	
Telephone:	
E-mail:	
Prerequisites:	MAT 281
Corequisites:	None
Course Hours and Credits:	4:1:4
Course Description:	Integral calculus of algebraic, trigonometric, exponential, and logarithmic functions with applications. Topics include methods and applications of integration, infinite series, parametric equations, and polar coordinates.
Required Text:	Stewart, James (2008). Calculus, (6th ed.), Belmont, CA: Brooks/Cole, Thomson Learning, Inc.
Materials:	A graphing calculator is required
Method of Instruction:	Lecture
Manuals:	None
Disclaimer:	None

CORE COURSE PERFORMANCE OBJECTIVES

The student will be able to:

1. Apply techniques of integration to solve application problems. (CCC 2,7)
2. Apply differential and integral calculus techniques to solve problems involving inverse functions. (CCC 2,7)
3. Define parametric equations, polar coordinates, and investigate their graphs. (CCC 2,7)
4. Solve problems involving infinite sequences and series. (CCC 1,2,7)

MEASURABLE PERFORMANCE OBJECTIVES

1. Apply techniques of integration to solve application problems. (CCC 2,7)

1.1 Determine the area between curves.
Determine the volume of a solid of revolution using:
   a. washers
   b. disks
   c. shells

1.2 Determine the arc length of curves in the plane.
1.3 Determine the area of a surface of revolution.

2. Apply differential and integral calculus techniques to solve problems involving inverse functions. (CCC 2,7)

2.1 Differentiate and integrate logarithmic and exponential functions.
2.2 Differentiate and integrate inverse trigonometric functions.
2.3 Differentiate and integrate hyperbolic functions.
2.4 Evaluate indeterminate forms using L'Hopital's Rule.
2.5 Evaluate limits using logarithms.
2.6 Integrate by the following methods:
   a. integration by parts
   b. trigonometric integrals
   c. partial fraction decomposition
   d. using computer algebra systems
2.7 Determine convergence or divergence of improper integrals.

3. Define parametric equations, polar coordinates, and investigate their graphs. (CCC 2,7)

3.1 Investigate the graphs of parametric equations:
   a. find the slope of the tangent line at a point
   b. calculate the arc length of a curve
   c. find the surface area generated by rotating curves
3.2 Investigate the graphs of polar equations:
   a. calculate the slope of the tangent line at a point
   b. find the area of a region
   c. find the length of curves
   d. determine the area of a surface generated by rotation
3.3 Convert a given equation from rectangular to polar coordinates and vice versa

4. Solve problems involving infinite sequences and series. (CCC 1,2,7)

4.1 Determine whether a sequence or series converges or diverges
4.2 Investigate the convergence of special series:
  a. geometric series
  b. harmonic series
  c. p-series
4.3 Investigate tests for convergence:
  a. integral test
  b. comparison test
  c. ratio test
  d. root test
  e. alternating series test
4.4 Investigate the absolute convergence of series
4.5 Investigate the convergence of power series:
  a. find the interval and radius of convergence
  b. Taylor and Maclaurin series
  c. the use of power series in the approximation of functions

EVALUATION CRITERIA

Students will demonstrate proficiency on all Measurable Performance Objectives at least to the 75% level. The final grade will be determined using the College Grading System:

92 - 100	A
83 - 91	B
75 - 82	C
0 - 74	R

Students should refer to the Student Handbook for information on Academic Standing Policy, Academic Honesty Policy, Students Rights and Responsibilities and other policies relevant to their academic progress.