

**NORTHEASTERN TECHNICAL COLLEGE
COURSE OUTLINE**

COURSE	PREFIX NO.	EFFECTIVE DATE	NEXT REVIEW DATE		
	MAT 141	September 2003	September 2004		
TITLE:		CREDITS	CONTACTS		
			CLASS	- LAB	- TOTAL
Analytical Geometry and Calculus II		4	4	0	4
<u>PREREQUISITES:</u> MAT 140 with a grade of "C" or better					

DESCRIPTION: This course includes the following topics: continuation of calculus of one variable, including analytic geometry, techniques of integration, volumes by integration, and other applications; infinite series, including Taylor series and improper integrals.

TEXTBOOK(S) OR ALTERNATIVE: Calculus - Alternate, 6th edition by Larson, Hostetler and Edwards.

MATERIALS (specifying those to be purchased by student): The student should purchase textbook, paper, pencils, and calculator.

COLLATERAL READING: None

CLASS MANAGEMENT ACTIVITIES (Attendance, tardies, testing, etc.):

Academic dishonesty: Students are expected to do their own work. Please refer to the NETC Student Code and Grievance Procedure for a definition of academic dishonesty and an outline of the disciplinary action that may result therefrom.

Attendance: The student will be dropped after missing more than 8 hours of the scheduled classes. If an instructor drops a student for excessive absences at any time during the semester, a grade of "F" will be assigned. If the student withdraws from the course, a grade of "W" or "WF" will be assigned as outlined in the College catalog.

Tardies: A student is considered tardy if not present for roll call which is taken at the beginning of the class. Three tardies will be considered as one (1) hour absence.

Disabilities Statement: Students with disabilities are encouraged to contact the Vice President for Student Services to discuss needs or concerns as they pursue an academic program and participate in campus life. The Vice President for Student Services will provide guidance regarding official documentation of disabilities and/or accommodation of needs. (See College Catalog)

Class Policy: This will be reviewed in class.

RESOURCES (A-V, persons, tools/equipment): Computerized instruction on selected topics and other self-help materials are available in the NETC Student Success Center. Ask your instructor for details.

COURSE TOPICAL OUTLINE (List topics and sub-topics of course) and
Calendar or approximate length of time devoted to topic.

TENTATIVE CLASS OUTLINE

WEEKS 1 - 3

CHAPTER 6

- 6.1 Area of a Region Between Two Curves
- 6.2 Volume: The Disc Method
- 6.3 Volume: The Shell Method
- 6.4 Arc Length and Surfaces of Revolution
- 6.5 Work
- 6.6 Fluid Pressure and Fluid Force
- 6.7 Moments, Centers of Mass, and Centroids

WEEKS 4 - 6

CHAPTER 7

- 7.1 Exponential Functions
- 7.2 Differentiation and Integration of Exponential Functions
- 7.3 Inverse Functions
- 7.4 Logarithmic Functions
- 7.5 Logarithmic Functions and Differentiation
- 7.6 Logarithmic Functions and Integration
- 7.7 Growth and Decay
- 7.8 Indeterminate Forms and L'Hôpital's Rule

WEEKS 7 - 9

CHAPTER 8

- 8.1 Review of Trigonometric Functions
- 8.2 Graphs and Limits of Trigonometric Functions
- 8.3 Derivatives of Trigonometric Functions
- 8.4 Integrals of Trigonometric Functions
- 8.5 Inverse Trigonometric Functions and Differentiation
- 8.6 Inverse Trigonometric Functions: Integration and Completing the Square
- 8.7 Hyperbolic Functions

WEEKS 10 - 12

CHAPTER 9

- 9.1 Basic Integration Formula
- 9.2 Integration by Parts
- 9.3 Trigonometric Integrals
- 9.4 Trigonometric Substitution
- 9.5 Partial Fractions
- 9.6 Integration by Tables and Other Integration Techniques
- 9.7 Improper Integrals

WEEKS 13 - 15

CHAPTER 10

10.1	Sequences
10.2	Series and Convergence
10.3	The Integral Test and p -Series
10.4	Comparisons of Series
10.5	Alternating Series
10.6	The Ratio and Root Tests
10.7	Taylor Polynomials and Approximations
10.8	Power Series
10.9	Representation of Functions by Power Series
10.10	Taylor and Maclaurin Series

OBJECTIVES OF COURSE:

The student will be introduced to the techniques of integration with emphasis on applications, including volumes, infinite series, Taylor series, and improper integrals.

MATHEMATICAL/COMPUTATIONAL COMPETENCIES:

- The student will be able to perform arithmetic operations using whole numbers, fractions, decimals and percentages using English and metric systems.
- The student will be able to solve problems using signed numbers, linear equations, and geometric formulas.
- The student will be able to construct and interpret various types of graphs.
- The student will be able to perform various types of measurements.

INSTRUCTIONAL METHODS TO COMPLETE OBJECTIVES:

Lectures covering course material will be supplemented by exercises to be completed outside of class. Emphasis will be placed on problem solving techniques and understanding underlying theory.

EVALUATIVE METHODS TO APPRAISE OBJECTIVES:

The final grade for MAT 141 will be the arithmetic average of the grades of the topical tests (no fewer than 5 test). No test grades will be dropped. As a general rule **no** make-up tests are given. Exceptions to this rule are made only if the student has discussed with the instructor his or her individual need. This discussion must take place before the test is given to the rest of the class or shortly after the class is over. Failure to make prior arrangements will result in **not** being allowed to take a make-up test.

GRADING SCALE:

The grade point scale that will be used is as follows:

A	= 93 - 100
B	= 85 - 92
C	= 77 - 84
D	= 69 - 76
F	= Below 69