Tennessee Technological University
Mathematics Department

MATH 1920: Calculus II

I.   COURSE DESCRIPTION FROM CATALOG:
Integrals of functions of one variable with applications, sequences and series. Lec. 4. Cr. 4.

II.   PREREQUISITE(S):
C or better in MATH 1910; or equivalent AP credit for MATH 1910

III.   COURSE OBJECTIVE(S):
To study integrals of functions of one variable and their applications in the physical and life sciences.

IV.   STUDENT LEARNING OUTCOMES:
Upon successful completion of the course a student will be able to evaluate integrals using   the substitution method, integration by parts, trigonometric substitutions, and partial fraction decomposition, including being able to recognize and evaluate improper integrals; be able to apply techniques of integration to solve problems involving the area between two curves, the surface area and volume of a solid of revolution and the arc length of a curve; be able to apply differentiation and integration techniques to determine certain properties of curves given parametrically, including those given by polar equations; be able to use standard tests to determine the convergence of sequences and series; and be able to create Taylor and Maclaurin series and determine the interval of convergence of such series.

V.   TOPICS TO BE COVERED:

Appendix:
G: The Logarithm Defined as an Integral (optional)

Chapter 6:
6.1 Areas between Curves
6.2 Volumes
6.3 Volumes by Cylindrical Shells
6.4 Work (optional)
6.5 Average Value of a Function

Chapter 7:
7.1 Integration by Parts
7.2 Trigonometric Integrals
7.3 Trigonometric Substitution
7.4 Integration of Rational Functions by Partial Fractions
7.5 Strategy for Integration
7.6 Integration Using Tables and Technology (optional)
7.7 Approximate Integration

7.8 Improper Integrals

Chapter 8:
8.1 Arc Length
8.2 Area of a surface of a Revolution
8.3 Applications to Physics and Engineering

Chapter 10:
10.1 Curves Defined by Parametric Equations
10.2 Calculus with Parametric Curves
10.3 Polar Coordinates
10.4 Calculus in Polar Coordinates
10.5 Conic Sections (optional)

Chapter 11:
11.1 Sequences
11.2 Series
11.3 The Integral Test and Estimates of Sums
11.4 The Comparison Tests
11.5 Alternating Series and Absolute Convergence
11.6 The Ratio and Root Tests
11.7 Strategy for Testing Series
11.8 Power Series
11.9 Representations of Functions as Power Series
11.10 Taylor and McLaurin Series

VI.   POSSIBLE TEXTS AND REFERENCES:
Calculus Early Transcendentals, 9th edition by James Stewart

VII.   STUDENT ACADEMIC MISCONDUCT POLICY:
Maintaining high standards of academic integrity in every class at Tennessee Tech is critical to the reputation of Tennessee Tech, its students, alumni, and the employers of Tennessee Tech graduates. The Student Academic Misconduct Policy describes the definitions of academic misconduct and policies and procedures for addressing Academic Misconduct at Tennessee Tech. For details, view the Tennessee Tech's Policy 217 – Student Academic Misconduct at Policy Central.

VIII.   DISABILITY ACCOMMODATION:
Students with a disability requiring accommodations should contact the Accessible Education Center (AEC). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The AEC is located in the Roaden University Center, Room 112; phone 931-372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at Policy Central.