MATH 2414 STEM
Calculus II

Western Texas College

I. Basic Course Information
   A. MATH 2414 Course Description: Differentiation and integration of transcendental functions; parametric equations and polar coordinates; techniques of integration; sequences and series; improper integrals.
   B. Any required prerequisites: Students must make a C or better in MATH 2413.
   C. Required Grade for Enrolling in the Next Course in this Sequence: A grade of C in this course is required to advance to MATH 2415.
   D. Advancement Via Individual Determination (AVID) learning strategies will be implemented periodically throughout the course.
   E. This course has been designed to prepare students whose chosen field of study requires a STEM mathematical pathway.
   F. Project Base Learning (PBL) is an active learning method in which students gain knowledge and skill by investigating and responding to a tangible, engaging and complex question, problem or challenge.
   G. Online course content is administered through the college's learning management system (LMS), Moodle, also called eCampus. A link to eCampus can be found on mywtc.edu and to Moodle (the big M with a graduation cap) on the college's home page, www.wtc.edu.

II. Student Learning Outcomes

   A. Use the concepts of definite integrals to solve problems involving area, volume, work, and other physical applications.
   B. Use substitution, integration by parts, trigonometric substitution, partial fractions, and tables of anti-derivatives to evaluate definite and indefinite integrals.
   C. Define an improper integral.
   D. Apply the concepts of limits, convergence, and divergence to evaluate some classes of improper integrals.
   E. Determine convergence or divergence of sequences and series.
   F. Use Taylor and MacLaurin series to represent functions.
   G. Use Taylor and MacLaurin series to integrate functions not integrable by conventional methods.
   H. Use the concept of polar coordinates to find areas, lengths of curves, and representations of conic sections.

III. Course Requirements
   A. Major Requirements—All major requirements must be proctored.
      1. In-Class Participation
      2. Unit Exams
      3. Midterm Exam
      4. Final Exam

B. Minor Requirements
   1. Binder Checks
   2. Homework
   3. Quizzes
   4. Projects

IV. Testing Requirements
   A. Students are NOT allowed to use their book or notes of any kind while completing major requirements.

V. Information on Books and Other Course Materials

   A. Required Book: Calculus (Early Transcendentals) 2nd Edition by William Briggs and Lyle Cochran. Book ISBN: 9780321954428
   B. Required Access Code: Online Students must purchase a MyMathLab Access Code. This code can be purchased stand alone or bundled with the textbook. MyMathLab stand alone (provides e-book) ISBN: 0321653998. A la carte version w/MML ISBN: 9780321965165.
   C. Calculators: A TI-84 or higher is strongly recommended. The TI-89, TI-Inspire with CAS or any other calculator with CAS capability are not permitted.

VI. Other Policies, Procedures and important dates. Please refer to the WTC Catalog for the following:

   A. Campus Calendar
   B. Final exam schedule
   C. How to drop a class.
   D. Withdrawal information
   E. Student Conduct/Academic Integrity
   F. Class Attendance
   G. Students with disabilities

VII. Planned Course of Study

Chapters and Sections to be covered throughout the semester		
Chapter 6—Applications of Integration	6.1	Velocity and Net Change
	6.2	Regions Between Curves
	6.3	Volume by Slicing
	6.4	Volume by Shells
	6.5	Length of Curves
	6.6	Surface Area
	6.7	Physical Applications
	6.8	Logarithmic and Exponential Functions Revisited
	6.9	Exponential Models
	6.10	Hyperbolic Functions
Chapter 7—Logarithmic and Exponential Functions	7.1	Basic Approaches
	7.2	Integration by Parts
	7.3	Trigonometric Integrals
	7.4	Trigonometric Substitutions

	7.5	Partial Fractions
	7.6	Other Integration Strategies
	7.7	Numerical Integration
	7.8	Improper Integrals
	7.9	Introduction to Differential Equations
Chapter 8—Integration Techniques	8.1	An Overview of Sequences and Series
	8.2	Sequences
	8.3	Infinite Series
	8.4	The Divergence and Integral Tests
	8.5	The Ratio, Root and Comparison Tests
	8.6	Alternating Series
Chapter 9—Sequences and Infinite Series	9.1	Approximating Functions with Polynomials
	9.2	Properties of Power Series
	9.3	Taylor Series
	9.4	Working with Taylor Series
Chapter 10—Power Series	10.1	Parametric Equations
	10.2	Polar Coordinates
	10.3	Calculus in Polar Coordinates
	10.4	Conic Sections

*This schedule is subject to change at the discretion of the instructor.

Last Modified: August 23, 2019