Tennessee Tech University
Department of Mathematics
Syllabus for Extended Calculus 1B
MATH 1906 (3 credit hours)
Time and Location
Semester

Course Description:
Limits, continuity, derivatives and integrals of functions of one variable with applications. Lec. 4. Cr. 3.

Credit Restriction:
Completion of both Math 1900 and Math 1905 is equivalent to completion of Math 1910. Students will not be given credit for this course and Math 1910.

Prerequisite(s):
C or better in Math 1904 (Extended Calculus 1A)

Course Objectives:
To study the topics of limits, continuity, derivatives, and integrals of functions of one variable and their applications in the physical and life sciences. After finishing the course students are expected to know the importance of the definitions and have the ability to use them.

The goal of the general education mathematics requirement is to enhance students' abilities to utilize mathematics. Students will demonstrate:
1. The ability to use mathematics to solve problems.
2. The ability to create or analyze graphs (or other mathematical representations of data/relationships).
3. Proficiency in mathematical computations/algorithms.
4. Understanding of mathematical concepts.

Student Learning Outcomes:
Upon successful completion of the course, the student will have a conceptual understanding of the notion of a limit, derivative, and integral of a function of a single variable; be able to find limits using various tools, including approximations, algebraic manipulations, the Squeeze Theorem, and L'Hospital's Rule and be able to recognize when a limit does not exist; be able to use both the definition of derivative and various differentiation rules to differentiate algebraic, logarithmic, exponential, trigonometric, and inverse trigonometric functions as well as combinations and compositions of these functions; be able to apply knowledge of derivatives to solve related rates, optimization, and curve sketching problems; be able to find antiderivatives and us the Fundamental Theorem of Calculus to determine indefinite integrals and evaluate definite integrals of the aforementioned types of functions; and be able to apply knowledge of integrals to determine the net area between a curve and the x-axis.

Topics to Be Covered:
Chapter 3:

3.4: Chain Rule (optional review)
3.5: Implicit Differentiation
3.6: Derivatives of Logarithmic Functions
3.8: Exponential Growth and Decay (optional)
3.9: Related Rates
3.10: Linear Approximations and Differentials
3.11: Hyperbolic Functions
Chapter 4:
4.1: Maximum and Minimum Values
4.2: The Mean Value Theorem
4.3: How Derivatives Affect the Shape of a Graph
4.4: Indeterminate Forms and L'Hospital's Rule
4.5: Summary of Curve Sketching
4.7: Optimization Problems
4.8: Newton's Method
4.9: Antiderivatives
Chapter 5:
Appendix E: Summation Notation and Mathematical Induction
5.1: Area and Distances
5.2: The Definite Integral
5.3: The Fundamental Theorem of Calculus
5.4: Indefinite Integrals and the Net Change Theorem
5.5: The Substitution Rule

Possible Texts and References:

Calculus Early Transcendentals, 9th edition by James Stewart

Any Technology That May Be Used:

Scientific Calculator (No graphing calculators are allowed on quizzes or tests, and calculators may not be shared)
WebAssign
Desmos

Course Policies

Student Academic Misconduct Policy

Maintaining high standards of academic integrity in every class 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 Tennessee Tech's policy 217 – student academic misconduct at policy central.

Attendance Policy

Attendance and participation are expected each time the class meets. Absences affect your understanding of the material as well as your grade when assignments are missed. Students who are unable to attend class for an extended period of time due to an emergency/extenuating circumstance (i.e., medical illness, hospitalization, death in the family/bereavement, military or legal obligation), may

contact the Office of the Vice President for Student Affairs at studentaffairs@tntech.edu to request an absence notification.

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 Tennessee Tech's policy 340 – services for students with disabilities at policy central.

Additional Resources

Technical Help

If you are experiencing technical problems, visit the myTech IT Helpdesk for assistance.
If you are having trouble with one of the instructional technologies (i.e. Zoom, Teams, Qualtrics, Respondus, or any technology listed here)visit the Center for Innovation in Teaching and Learning (CITL) website or call 931-372-3675 for assistance.
For accessibility information and statements for our instructional technologies, visit the CITL's Learner Success Resource page.

Tutoring

The university provides free tutoring to all Tennessee Tech students. Tutoring is available for any class or subject, as well as writing, test prep, study skills, and resume support. Appointments are scheduled, so contact the Learning Center website for more information.

Health and Wellness

Counseling Center

The Counseling Center offers brief, short-term, solution-focused therapeutic interventions for Tennessee Tech University students. The staff of the Counseling Center is available to assist students with their personal and social concerns in hopes of helping them achieve satisfying educational and life experiences. To learn more or schedule an appointment, visit the Counseling Center website.

Health Services

Health Services offers high-quality, affordable care that is accessible and promotes the health and wellness of our Tennessee Tech community. Visit the Health Services website to learn more.

Pandemic Protocols

Each student must take personal responsibility for knowing and following any University protocol related to pandemics and other public health events. Students are expected to follow all directives published by Tennessee Tech on its official webpage. As conditions related to the COVID-19 pandemic change, the University's COVID-19 protocols are also likely to change. Students are expected to monitor the University's official webpage to stay up to date on public health protocols.