

Syllabus

Course Information

Course Information

Course Number: 171

Course Title: Calculus I

Section: 501

Time: MWF 10:20 - 11:10am

Location: BLOC 161

Credit Hours: 4

Instructor Details

Instructor: Emil J. Straube

Office: BLOC 601M

Phone: none

E-Mail: straube@math.tamu.edu

Office Hours: MWF 11:30-12:30 or by appointment. Office hours will be remote via Zoom; Meeting ID 987 7032 3184, passcode 671447. You will have to register once.

Course Description

Vectors, functions, limits, derivatives, Mean Value Theorem, applications of derivatives, integrals, Fundamental Theorem of Calculus. Designed to be more demanding than [MATH 151](https://catalog.tamu.edu/search/?P=MATH%20151) [_\(https://catalog.tamu.edu/search/?P=MATH%20151\)_](https://catalog.tamu.edu/search/?P=MATH%20151).

Course Prerequisites

MATH 150 (<https://catalog.tamu.edu/search/?P=MATH%20150>) or equivalent or acceptable score on TAMU Math Placement Exam.

Course Learning Outcomes

Students will become familiar with the basics of one variable calculus, including functions and models, limits, derivatives, and integrals.

The priorities of this course are:

- Ability to correctly solve problems, and write the solutions in a coherent fashion.
- Conceptual understanding of material.
- Ability to state and apply definitions and theorems and provide simple proofs.

Textbook

The text is

James Stuart: Calculus, 8th edition, Early Transcendentals.

Grading Policy

There will be three exams during the semester, each worth 100 points. There will be a comprehensive final exam, worth 200 points. In addition, there will be twelve (~weekly) quizzes, each worth 10 points. I will count your ten highest quizzes, for a total quiz grade of 100 points. Thus there are 600 total possible points. Your letter grade will be determined as follows: 540-600 = A; 480-539 = B; 420-479 = C; 360-419 = D; below 360 = F.

Course Schedule

The course meets three times weekly for lecture (MWF, 10:20-11:10, BLOC 161), and one time for lab (TH 8:00-8:50, BLOC 161). The lab session is an integral part of the course; it is devoted to group work and *weekly quizzes*.

Weekly Schedule

Week 1

- o Vectors (Supplement I = Appendix J)
- o The Dot Product (Supplement I = Appendix J)
- o Vector Functions and Parametric Curves (Supplement I = Appendix J)

Week 2

- o Sec 1.5: Inverse Trigonometric Functions
- o Sec 2.2: The Limit of a Function
- o Sec 2.3: Calculating Limits Using the Limit Laws

Week 3

- o Sec 2.4: The Precise Definition of a Limit
- o Sec 2.5: Continuity

Week 4

- o Sec 2.6: Limits at Infinity, Horizontal Asymptotes
- o Sec 2.7: Derivatives and Rates of Change
- o Sec 2.8: The Derivative as a Function

Week 5

- o Sec 3.1: Derivatives of Polynomial and Exponential Functions
- o Sec 3.2: The Product and Quotient Rules
- o Sec 3.3: Derivatives of Trigonometric Functions (includes higher order derivatives)

o Friday, Oct.1, Exam 1

Week 6

- o Sec 3.4: Chain Rule
- o Sec 3.5: Implicit Differentiation (includes derivatives of inverse trig functions)
- o Sec 3.6: Derivatives of Logarithmic Functions

Week 7

- o Derivatives of Vector Functions (Supplement II = Appendix K)*
- o Slopes and Tangents to Parametric Curves (Supplement II = Appendix K)*

Week 8

- o Sec 3.9: Related Rates*
- o Sec 3.10: Linear Approximations and Differentials*

Week 9

- o Sec 4.1: Maximum and Minimum Values*
- o Sec 4.2: Mean Value Theorem*
- o Sec 4.3: How Derivatives Affect the Shape of a Graph*

Week 10

- o Sec 4.4: Indeterminate Forms and L'Hospital's Rule*
- o Sec 4.5: Summary of Curve Sketching*

o Friday, Nov.5, Exam 2

Week 11

- o Sec 4.7: Optimization Problems*
- o Sec 4.9: Antiderivatives*

Week 12

- o Sec 5.1: Areas and Distances*
- o Sec 5.2: The Definite Integral (includes Sigma notation and Riemann sums)*
- o Sec 5.3: The Fundamental Theorem of Calculus*

Week 13

- o Sec 5.4: Indefinite Integrals and the Net Change Theorem*
- o Thanksgiving break (in Fall semester)*

Week 14

- o Sec 5.5: The Substitution Rule*
- o Sec 6.1: Areas Between Curves*

o Friday, Dec. 3, Exam 3

Week 15

- o Review*

Week 16

o Final Exam, Tuesday, Dec. 14, 8:00-10:00.

Learning Resources

For help sessions, please check with the Math Learning Center (<https://mlc.tamu.edu/>).

University Policies

To help protect Aggieland and stop the spread of COVID-19, Texas A&M University urges students to be vaccinated and to wear masks in classrooms and all other academic facilities on campus, including labs. Doing so exemplifies the Aggie Core Values of respect, leadership, integrity, and selfless service by putting community concerns above individual preferences. COVID-19 vaccines and masking — regardless of vaccination status — have been shown to be safe and effective at reducing spread to others, infection, hospitalization, and death.

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to **Student Rule 7** (<https://student-rules.tamu.edu/rule07/>) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to **Student Rule 7** (<https://student-rules.tamu.edu/rule07/>) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor” (**Student Rule 7, Section 7.4.1** (<https://student-rules.tamu.edu/rule07/>)).

“The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence” (**Student Rule 7, Section 7.4.2** (<https://student-rules.tamu.edu/rule07/>)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (**See Student Rule 24** (<https://student-rules.tamu.edu/rule24/>)).

Academic Integrity Statement and Policy

“An Aggie does not lie, cheat or steal, or tolerate those who do.”

“Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case” (**Section 20.1.2.3, Student Rule 20** (<https://aggiehonor.tamu.edu/Rules-and-Procedures/Rules/Honor-System-Rules>)).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at **aggiehonor.tamu.edu** (<https://aggiehonor.tamu.edu/>).

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources office on your campus (resources listed below). Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu (<https://disability.tamu.edu>).

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](https://rules-saps.tamu.edu/PDFs/08.01.01.M1.pdf) (<https://rules-saps.tamu.edu/PDFs/08.01.01.M1.pdf>)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

*Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with **Counseling and Psychological Services** (<https://caps.tamu.edu/>)(CAPS).*

*Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's **Title IX webpage** (<https://titleix.tamu.edu/>).*

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care by utilizing available resources and services on your campus.

*Students who need someone to talk to can contact **Counseling & Psychological Services** (<https://caps.tamu.edu/>)(CAPS) or call the **TAMU Helpline** (<https://caps.tamu.edu/helpline/>)(979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at **suicidepreventionlifeline.org** (<https://suicidepreventionlifeline.org/>).*