



Texas A&M University - San Antonio
Department of Science and Mathematics
Math 3415.001 Calculus 3 - Fall 2021

Instructor: Hoan Duong
Class Meeting: 3:30 pm - 4:45 pm TR
Classroom: Science & Technology 166
Office hours: MW 12:00-14:50, TR 14:00-14:50

Credit hours: 3
Office phone: 210-784-2253
Office: Classroom Hall 334
E-mail: hduong@tamusa.edu

Other times by appointment. OR online

Course Description and Materials

Course Description. This course covers functions of several variables, three-dimensional geometry, partial derivatives, multiple integrals, line and surface integrals, Green's Theorem, Stroke's Theorem, and applications

Objectives. MATH 3415 helps students develop Critical Thinking, Communication, and Empirical and Quantitative Skills by focusing on student understanding of key mathematical concepts in calculus by recognizing, identifying, solving, analyzing and explaining appropriately model applicable real world situations.

Learning Outcomes. Upon completion of this course, students will be able to:

1. Perform calculus operations on vector-valued functions, including derivatives, integrals, curvature, displacement, velocity, acceleration, and torsion.
2. Perform calculus operations on functions of several variables, including partial derivatives, directional derivatives, and multiple integrals.
3. Find extrema and tangent planes.
4. Solve problems using the Fundamental Theorem of Line Integrals, Green's Theorem, the Divergence Theorem, and Stokes' Theorem
5. Apply the computational and conceptual principles of calculus to the solutions of real-world problems.

Pre-requisites. MATH 2314 and MATH 2114 (or MATH 2414); all prerequisites require a grade of "C" or higher.

Recommended textbooks and other materials.

Essential Calculus Early Transcendental, 2nd ed., by James Stewart, Brooks/Cole CENGAGE Learning
ISBN: 9781133112280

My lectures are posted at www.algebrahd.org

Calculator required

COURSE CONTENT:

CHAPTER 10. VECTORS AND THE GEOMETRY OF SPACE.

- 10.1 Three-Dimensional Coordinate Systems.
- 10.2 Vectors.
- 10.3 The Dot Product.
- 10.4 The Cross Product.
- 10.5 Equations of Lines and Planes.
- 10.6 Cylinders and Quadric Surfaces.
- 10.7 Vector Functions and Space Curves.
- 10.8 Arc Length and Curvature.
- 10.9 Motion in Space: Velocity and Acceleration.

CHAPTER 11. PARTIAL DERIVATIVES.

- 11.1 Functions of Several Variables.
- 11.2 Limits and Continuity.
- 11.3 Partial Derivatives.
- 11.4 Tangent Planes and Linear Approximations.
- 11.5 The Chain Rule.
- 11.6 Directional Derivatives and the Gradient Vector.
- 11.7 Maximum and Minimum Values.
- 11.8 Lagrange Multipliers.

CHAPTER 12. MULTIPLE INTEGRALS.

- 12.1 Double Integrals over Rectangles.
- 12.2 Double Integrals over General Regions.
- 12.3 Double Integrals in Polar Coordinates.
- 12.4 Applications of Double Integrals.
- 12.5 Triple Integrals.
- 12.6 Triple Integrals in Cylindrical Coordinates.
- 12.7 Triple Integrals in Spherical Coordinates.
- 12.8 Change of Variables in Multiple Integrals.

CHAPTER 13. VECTOR CALCULUS.

- 13.1 Vector Fields.
- 13.2 Line Integrals.
- 13.3 The Fundamental Theorem for Line Integrals.
- 13.4 Green's Theorem.
- 13.5 Curl and Divergence.

- 13.6 Parametric Surfaces and Their Areas.
- 13.7 Surface Integrals.
- 13.8 Stokes' Theorem.
- 13.9 The Divergence Theorem.

Evaluation of Student Performance

3 Chapter Tests (70% together)

1 Comprehensive Final Exam (30%)

Tests are graded based on proper writing of the solutions (70%) that demonstrate a student's understanding of the subject and correct answers (30%)

NO MAKE-UP EXAMS. Final Exam score replaces 1 lowest test score, if any the latter is lower.

Course grades will be based on typical grading scale:

A:90-100%, B: 80-89.9%, C: 70-79.9%, D: 60-69.9%, F: < 60%.

Course Requirements and Expectations

Class Attendance.

Regularly attend class meetings. A student *might be* dropped from the course for excessive absence.

In the classroom, the instructor will spend time explain and discuss concepts and examples posted at www.algebrahd.org

Students should print and read the lectures before coming to classes.

We shall spend a great portion of class time for discussion and practice. Students are strongly encouraged to engage.

Students should spend a significant amount of time at home working on problems.

Minimize class interruption when being late or leaving early due to special circumstances.

Mobile phones should be turned off.

Withdraw from the course. **It is the student's responsibility to drop a course.**

Please contact the Welcome Center at 210-784-1300 if you desire to drop the course

General Policies

Mathematics Peer Tutoring Center: This is a free, appointment-based, one-on-one and group tutoring program for currently enrolled Texas A&M University-San Antonio students. To make an appointment, please call **(210) 784-1332** or email tutoring@tamusa.edu - walk-in's welcomed, but priority granted to those with appointments.

JAGS: Additional academic skill resources can be found in *The JAGS (Jaguar Academic Guides to Success) Program*. JAGS offers academic skill building strategies and can assist you in developing an effective academic success plan. If you are interested in the JAGS program, please contact the Student Academic Success Center at **(210) 784-1352**.

Student Academic Success Center: The Student Academic Success Center takes a developmental approach to help students complete their academic goals from orientation through graduation. The center offers academic and skills workshops, one-on-one appointments, and online resources to help retention efforts at Texas A&M University-San Antonio. The goal of the center is to help students discover, self-reflect, and become independent learners. Student Academic Success Center is located in the Madla Building, Suite 336. The contact information: call **(210) 784-1352** or email at Student.Success@tamusa.edu.

Blackboard: Students are responsible for checking blackboard regularly for announcements, assignments, and other support materials posted on Blackboard. It is solely the student's responsibility to be aware of class updates.

Writing Center: The Jaguar Writing Center provides writing assistance to graduate and undergraduate students in all three colleges. Writing tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their writing assignments. Students can make individual or group appointments with a writing tutor. Please either call **(210) 784-1307** or email Student.Success@tamusa.edu to make an appointment.

Academic Accommodation

Student Need Academic Accommodations: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning

environment that provides for reasonable accommodation of their disability. If you believe you have a disability that may require accommodations, please contact Counseling and Disability Support Services for the coordination of services. DSS is located on main campus, 2nd floor of the Central Academic Building, Suite 210. If you have any questions or need additional information, please contact DSS staff at (210) 784-1335 or email dsupport@tamusa.edu.

General Policies

Mathematics Program Attendance Policy: Attendance is fundamental for academic success so students are expected to attend class as scheduled to include participation which is part of calculating the course grade. Accordingly, attendance will be recorded from the semester official census date. Excessive unexcused absences will **NOT** be tolerated, and thus more than **10%** of unexcused absences will result in the student being dropped from the course. Absences will be excused due to special circumstances with appropriate documentation such as illness, death of a close family member, religious holiday, official university activities, military duties, disability accommodations and related conditions, and participation in legal proceedings. Students should inform instructor in advance of any such special circumstances as possible.

Financial Aid and Verification of Attendance: According to the federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which includes class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the student will not or has not begun attendance. Faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended the first week of class. Any student receiving federal financial aid who does not attend the first week of class will have his/her aid terminated and returned to the DoE. Besides, any student who stops attending at any time during the semester may also need to return a portion of his/her federal aid.

Student Code of Conduct: Appropriate conduct is essential to the effective functioning of the university. University policy defines unacceptable conduct, both academic and non-academic misconducts, and penalties for such behaviors. All policies and procedures for the Student Code of Conduct can be found in the Texas A&M University-San Antonio Student Handbook.

<http://www.tamusa.edu/studentengagementsuccess/StudentRightsAndResponsibilities/>

NOTE: The student is solely responsible for familiarizing himself/herself with these misconduct issues and policies at Texas A&M University-San Antonio. More can be found at your Student Handbook.

Your Instructor's Commitment to Academic Honesty and Integrity: Your instructor is sympathetic to the pressures faced by many students (e.g., full time employment, family responsibilities), and will do his/her best to provide you with any assistance you may need to succeed in this course. However, he/she is also committed to awarding grades based on students' honest efforts. Therefore, your

instructor will accept **NO** excuses for any form of academic misconduct. All incidents of suspected academic dishonesty will be investigated and pursued to the fullest extent permitted by university policy.

Academic Dishonesty: Students at Texas A&M University-San Antonio are expected to adhere to the highest standards of academic honesty and integrity. Academic dishonesty for which a student is subject to penalty includes **cheating, plagiarism, fabrication, multiple submission, misrepresentation of academic records, facilitating academic dishonesty, unfair advantage, violating known safety requirements** and **ethical misconduct**. This includes holding other students to same standards and reporting any incidents of alleged violation of the honesty policy to the instructor involved or, if necessary, to the appropriate academic department head. All students are responsible for being familiar with the Academic Dishonesty Policy which may be found in the Texas A&M University-San Antonio Student Handbook.

<http://www.tamusa.edu/studentengagementsuccess/StudentRightsAndResponsibilities/Academic-Dishonesty/Policies.html>

NOTE: The student is solely responsible for familiarizing himself/herself with these academic integrity issues and policies at Texas A&M University-San Antonio. All suspected cases of dishonesty will be fully investigated.

Nonacademic Conduct: The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede the exercise of those rights. Some examples are: physical or verbal abuse or threats; sexual misconduct or harassment; theft of property or services; and disruptive activities etc. Such incidents will be adjudicated by the College Dean/Director of Student Rights and Responsibilities.

<http://www.tamusa.edu/studentengagementsuccess/StudentRightsAndResponsibilities/>

The Six Course Drop Rule: Students are subject to the requirements of Senate Bill (SB) 1231 passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop doesn't affect the student's GPA, but course drops exceeding the maximum allowed by SB 1231 will be treated as "F's" and will impact the student's GPA.

University Email Policy and Course Communications: All correspondences between professors and students must occur via university email accounts. You must have Jaguar email account ready and working. If it is not working, contact the help desk at sahelp@tamusa.edu or at **(210) 784-4357**.

Key Dates

The complete academic calendar is available online:

<http://www.tamusa.edu/provost/academicresources/academiccalendar.html>

Services

Tutoring Services. It is a free, appointment-based tutoring program

Central Academic Building, Room 208

Brooks City Base Campus, Room 104

(210)784-1332

tutoring@tamusa.tamus.edu

<http://www.tamusa.tamus.edu/studentengagementsuccess/tutoringservices/index.html>

Office of Military Services

Patriots' Casa, Suite 202

military@tamusa.edu

VACertification@tamusa.edu

<http://www.tamusa.edu/militaryaffairs/>

Student Counselling & Wellness Services.

Patriots' Casa, Suite 212

Brooks City Base Campus, Room 148

(210)784-1331

StuCounseling@tamusa.edu

<http://www.tamusa.edu/studentengagementsuccess/studentcounseling>

University Police Department

Ronald Davidson, Chief of Police

Main Campus Building, Room 120B

(210)784-1900

