Mathematics 2450 sec. D01, Calculus III with Applications, Spring 2026
COURSE SYLLABUS

Meeting: Online Asynchronous

Instructor: Eugenio Aulisa, Professor
Office Hours: Online on Zoom, MWF 1:30-2:30pm, and daily by e-mail
email: eugenio.aulisa@ttu.edu
phone: (806) 834-6684

Textbook:
K. Smith, M. Strauss and M. Toda, Calculus, Special Edition Chapter 9-13, 7th National Edition, Kendall Hunt.
or K. Smith, M. Strauss and M. Toda, Calculus, 7th National Edition, Kendall Hunt.

External Links: Class WebPage WebWork Homework System Canvas TTU Zoom Office Hours

A detailed **Class Schedule** with short videos by topic, notes, assignments deadlines, and exams is given at the bottom of the class **WebPage** and on **Canvas**

Classes Policies: This is a distance class, all the students enrolled in this class should be highly responsible for managing their schedule. The instructor expects the student to read each section of the textbook and watch the short videos on the class **WebPage** before attempting to solve the homework problems. When asking for help, you need to show your work by typing it on the email (better) or by attaching a scanned copy of your work. When asking for help with a **WebWork** problem, you should use the button email to the instructor at the bottom of the screen. Otherwise, you may not get any answer.

About the course. Partial differentiation, functions of several variables, multiple integrals, line integrals, surface integrals, Stokes Theorem. Applications and problem-solving are strongly emphasized. Partially fulfills Core Mathematics requirement.

Mission Statement. This course covers Calculus of several variables. The concepts are extensions of the concepts from Calculus I. It is necessary to remind the students of those basic concepts, as the course progresses. Multivariable Calculus is an important tool in Science and Engineering. The instructor should emphasize the importance of all relevant concepts, including: curves and surfaces in Euclidean 3-space, length and curvature, area and volume; surfaces, partial derivatives, total differential, tangent planes to surfaces; gradient; vector-valued functions; path integral; Stokes' theorem, which should be stated, with an emphasis on its important particular cases, Green's Theorem and Divergence Theorem - followed by a few basic examples. This course is organized as a four hour lecture for the regular academic year (Fall and Spring) and the corresponding amount of hours for each Summer Session. Each hour will be devoted to covering the material from the text-book integrated with applications, examples and exercises that are relevant to the learning objectives, and improve the student success in the examinations.

Student Learning Outcomes. Math 2450 satisfies the university core curriculum requirement in Mathematics: "Students graduating from Texas Tech University should be able to demonstrate the ability to apply quantitative and logical skills to solve problems." It meets the TTU general education student learning outcomes for mathematics that students will: apply arithmetic, algebraic, geometric, statistical and logical reasoning to solve problems; represent and evaluate basic mathematical and/or logical information numerically, graphically, and symbolically; interpret mathematical and/or logical models such as formulas, graphs, tables and schematics, and draw inference from them. Students develop skills in differentiation and integration needed to solve problems in 3-dimensional space. In particular the students will master the concepts of tangent and normal vectors, and their geometric and physical interpretations; partial derivatives, tangent planes, directional derivatives, and gradients, and how to compute them; three-dimensional integration, and how to compute such integrals; vector fields, divergence, and curl, and how to calculate them.

Assessment of the Learning Outcomes:

1. **Handwritten notes on Canvas**, worth 10% of the overall grade. Almost every Sunday, the student must to submit on Blackboard detailed handwritten notes of the selected examples taken from the textbook. For each assignment, the student will receive a Pass/Fail grade, which will build up the 10% of the overall grade. The assignments are posted on Blackboard ahead of time.
2. **Homework** will be given on the **WebWork** sytem. Students will be informed by the instructor and via email (on the @ttu.edu address) about the HW, which should be completed before the given deadline (generally not more than 10 days). **Homework is worth 20% of the overall grade. However in order to pass the class your overall grade in the HW at the end of the semester should be at least 50%. This may appear radical, but besides the exams, the HW system is a major tool the instructor has to asses your class performances. The instructor will check regularly your HW score and let you know if you are not on track.**
3. **Examinations:**

Exam #1: Thur, Feb 12,	1.5 hour interval of your choice on **WebWork**	worth 15% of the overall grade
Exam #2: Thur, Mar 12,	1.5 hour interval of your choice on **WebWork**	worth 15% of the overall grade
Exam #3: Thur, Apr 16,	1.5 hour interval of your choice on **WebWork**	worth 15% of the overall grade
Final: Fri, May 8,	2.5 hour interval of your choice on **WebWork**	worth 30% of the overall grade

Grading Policy: a perfect score in all assessments results in an overall grade of 105%. If your overall score is less than 60% you will receive an F grade, in between 60-69% you will receive a D grade, in between 70-79% you will receive a C grade, in between 80-89% you will receive a B grade, in between 90-99% you will receive an A grade, with 100% or more you will receive A+ grade.

Exam Policies: Students are expected to take the midterm exams and the final exam as scheduled. There are no make ups for the examinations, except for reasons of illness, stated in writing by a medical doctor, observance of a religious holiday, university justified field trips or work conflicts. Usually, no other reasons are accepted (events, plane tickets, weddings, ...).

Exam Rules:

1. All exams are taken on the **WebWork** system. You have a 24-hour window to start your test in the given day. Once started you must complete the test in the given time. **At the end of the exam, upload a single file containing all your scratch work on Canvas.** I will review your handwritten work alongside your WebWork answers to confirm that you completed the problems yourself. This ensures that your solutions were obtained through genuine effort and not by guessing or relying on external tools such as AI.
2. Exam 1 covers chapters 9 and 10 (HW01-HW03), Exam 2 covers chapter 11 (HW04-HW06), Exam 3 covers chapter 12 (HW07-HW09), the Final Exam is comprehensive and it covers chapters 9 to 13 (HW01-HW11).
3. In each exam there will be several multiple choice questions.
4. The correct answer is ALWAYS among the 5 choices: I never use the "None of the above" choice.
5. You will have only ONE ATTEMPT to get it right.
6. To submit your work, you need to press the "Grade Test" button at the very bottom of the page. After you press it, you cannot change any of your answers. Be sure to complete all your work before pressing it.
7. The "Grade Test" button should be pressed before the due date otherwise a 0% score will be recorded.
8. The test score and solution keys will be available after 2-3 days
9. If you experience any technical problem during the exam, DO NOT WAIT, but immediately notify me during or after the test. When you notify me, be sure to explain carefully what happened, and be ready to take action. There is no much to do for me if you contact me (OR IF YOU TAKE ACTION) after days passed.

ADA accommodations (TTU Operating Policy 34.22**).** Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in Weeks Hall or call 806-742-2405.

Absence for observance of a religious holy day (TTU Operating Policy 34.19**).** 1. "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20. 2. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. 3. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

Academic Integrity (TTU Operating Policy 34.12**).** Academic integrity is taking responsibility for one's own class and/or course work, being individually accountable, and demonstrating intellectual honesty and ethical behavior. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement, which then must be measured. Academic achievement includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning. Adhering to the standards of academic integrity ensures grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers.

Accommodation for Pregnant Students. To support the academic success of pregnant and parenting students and students with pregnancy related conditions, the University offers reasonable modifications based on the student's particular needs. Any student who is pregnant or parenting a child up to age 18 or has conditions related to pregnancy may contact Alex Faris, the Texas Tech University designated Pregnancy and Parenting Liaison, to discuss support available through the University. The Liaison can be reached by emailing alfaris@ttu.edu. Should a student communicate with the instructor that they are pregnant or have a pregnancy related condition or may need additional resources related to pregnancy or parenting, the instructor will communicate that student's information to the Title IX Coordinator, who will work with the student and others, as needed, to ensure equal access to the University's education program or activity.

For more information regarding supportive measures, please contact pregnancy & parenting liaison Alex Faris (alfaris@ttu.edu | 806.834.3420) or visit Title IX Pregnancy & Parenting. You can also visit the Title IX Pregnancy & Parenting website to submit a request to Alex Faris for assistance.

Please note the following important dates: **January 30,** last day for student-initiated drop without a penalty, (drop does not count against drop limit); **April 27,** last day for student-initiated drop with a penalty (counts against drop limit). After the deadline, the student must complete the course for a grade. Please visit the 2023-2024 official calendar for detailed information.

Course Outline

Chapter 9 (review 9.1-4, cover 9.5-9.7)	Vectors in Plane and in Space	6 hours
Chapter 10 (10.3, 10.5 are optional)	Vector-Valued Functions	5 hours
Chapter 11	Partial Differentiation	11 hours
Chapter 12 (12.6 is optional)	Multiple Integration	12 hours
Chapter 13	Vector Analysis	11 hours