

# Mathematics 2450 sec. Honors H01, Calculus III with Applications, Spring 2023

## COURSE SYLLABUS

Meeting: TR 12:30-2:20pm MATH115

Website: <http://www.math.ttu.edu/~eaulisa/Math2450Spring23H01.html>

**Instructor:** Eugenio Aulisa, Professor

**Office Hours:** Face to Face TR 9:00-11:00, and daily by e-mail from [WebWork](#)

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**phone:** (806) 834-6684

**All lectures will be delivered in class face-to-face. If you miss a class, a selection of short videos by topic is available on the class website. You can also find lecture notes and lecture videos from the previous semesters.**

**Potential for Course Modality Change.** If Texas Tech University campus operations are required to change because of health concerns related to the COVID-19 pandemic, it is possible that this course will move to hybrid or fully online delivery format. Should that be necessary, students will need a webcam and microphone and will be advised of additional technical and/or equipment requirements, including remote proctoring software.

**Textbook:** K. Smith, M. Strauss and M. Toda, [Calculus](#), 7<sup>th</sup> National Edition, Kendall Hunt.

**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:** Homework will be given on [WebWork](#). 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). Many of the HW problems will be discussed in class at a later time. **Homework is worth 20% of the final 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 assess your class performances. The instructor will check regularly your HW score and let you know if you are not on track.**

<b>Examinations:</b> Exam #1: Thu, Feb 9, 12:30-2:20pm,	MATH 115	worth 15% of the final grade
Exam #2: Thu Mar, 9, 12:30-2:20pm,	MATH 115	worth 20% of the final grade
Exam #3: Thu, Apr 13, 12:30-2:20pm,	MATH 115	worth 20% of the final grade
Final Exam: Fri, May 5, 4:30-7:00pm,	MATH 115	worth 30% of the final grade

**Grading Policy:** a perfect score in all tests and homework 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.

**Classes start and end always on time.** Students are not allowed to leave the class before the end of the hour without authorization. During class time it is not allowed to text, chat or sleep. Please put in silent mode all your electronic devices.

**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, ...).

**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 West Hall or call 806-742-2405.

**Absence for observance of a religious holy day ([TTU Operating Policy 34.19](#)).** "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. 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. A student who is excused 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).** It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension. "Scholastic dishonesty" includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

Please note the following important dates: **January 27**, last day for student-initiated drop without a penalty, (drop does not count against drop limit); **April 18**, 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 2022-2023 [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

## Covid-19 Provost Office Message

It is energizing to be back on campus. However, the fall semester brings challenges with respect to COVID-19. We have consolidated guidance for the Texas Tech community into one [webpage](#).

- Although COVID-19 vaccinations are not mandated, Texas Tech strongly recommends that all students be vaccinated and receive a booster when eligible. The vaccines are safe and effective.
- Please visit our [vaccine page](#) and our [testing page](#) for additional information about on-campus vaccine and testing schedules.
- Face masks are strongly encouraged in classrooms and other public indoor settings on campus, including the Student Wellness Center.
- If you are sick or not feeling well, you should stay at your place of residence and wear a mask when around others. Do not attend class, work, or social functions. If you brought a COVID-19 home test kit, please use it to determine whether you are positive for the virus.
- For students living in an on-campus residence, a limited number of tests are available from Community Advisors in residence halls. Please reach out to yours virtually to request one.
- Students can also be tested at an [on-campus site](#).
- Students who meet the qualifications can contact [Student Health Services](#) to schedule an appointment to be tested. All students in university housing should develop an action plan in the event they are required to self-isolate due to a positive COVID-19 diagnosis. This plan should include a location to complete the self-isolation, access to groceries/meal delivery, access to necessary medications, numbers of emergency contacts, and contact information for their preferred healthcare provider.
- Students (both vaccinated and unvaccinated) who have been identified as having a known exposure to a COVID-19 positive person should wear a face mask for a period of 10 days and should seek a SARS-CoV-2 test at day five after exposure. If the individual begins to develop symptoms at any point during the 10 days following exposure, they should immediately self-isolate and seek a COVID-19 test.

- Self-isolation for five days is required for all students (vaccinated or unvaccinated) who test positive for COVID-19. After the five-day isolation period, if the student is asymptomatic or their symptoms are resolving (fever free without the use of fever reducing medication for 24 hours), they may return to class/activities but should wear a face mask for an additional five days.
- Students who are positive should report the result. This generates a letter that you can provide to your professors and instructors, notifying them of your positive diagnosis.