

Mathematics 2450 sec. Distance D01, Calculus III with Applications, Fall 2021

COURSE SYLLABUS

Meeting: TR 11:30-01:20pm on Zoom

Website: <http://www.math.ttu.edu/~eaulisa/Math2450Fall21D01.html>

Instructor: Eugenio Aulisa, Professor

TA and Emergency Substitute: Vigil, Bradely

Office Hours: Online on Zoom, TR 9:00-11:00, and daily by e-mail from WebWork

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phone: (806) 834-6684

Zoom link: <https://zoom.us/j/5791285573?pwd=QjdCZUZleC9MSGdxZlJCbERDaUdWdz09>

All lectures will be broadcast on Zoom and recorded. Students can choose the modality they prefer to attend the lecture: synchronous or asynchronous distance.

Textbook: K. Smith, M. Strauss and M. Toda, *Calculus*, 7th National Edition, Kendall Hunt.

Online version of the book can be found at <https://he.kendallhunt.com/product/calculus>

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 the WebWork system at <https://webwork.math.ttu.edu/webwork2/f21eaulisam2450sD01/>. 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.

Examinations: Exam #1: Thu, Sep 16, 12:00-1:20pm,	Zoom and WebWork	worth 15% of the final grade
Exam #2: Thu, Oct 14, 12:00-1:20pm,	Zoom and WebWork	worth 20% of the final grade
Exam #3: Thu, Nov 11, 12:00-1:20pm,	Zoom and WebWork	worth 20% of the final grade
Final Exam: Fri, Sat 4, 1:30-4:00pm,	Zoom and WebWork	worth 30% of the final grade

Grading Policy: a perfect score in all tests and homeworks 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, ...).

See below some general exam information and rules:

- All exams are taken on the WebWork system.
- 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).
- In each exam there will be several multiple choice questions.
- The correct answer is ALWAYS among the 5 choices: I never use the "None of the above" choice.
- You will have only ONE ATTEMPT to get it right.
- 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.
- The "Grade Test" button should be pressed before the due date otherwise a 0% score will be recorded.
- The test score and solution keys will be available after 2-3 days
- 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 have 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 West Hall or call 806-742-2405. <https://www.depts.ttu.edu/opmanual/OP34.22.pdf>.

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.

<https://www.depts.ttu.edu/opmanual/OP34.19.pdf>.

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. <http://www.depts.ttu.edu/opmanual/OP34.12.pdf>.

Please note the following important dates: **September 8**, last day for student-initiated drop without a penalty, (drop does not count against drop limit). **November 23**, 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. The 2021-2022 official calendar can be found at: https://www.depts.ttu.edu/officialpublications/calendar/21-22_cal_detailed.php.

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 Related TTU Policies

Click [here](#) for see the full document issued by the Provost Office on August 13.

- Although COVID-19 vaccinations are not mandated, Texas Tech is **strongly recommending that all students be vaccinated for COVID-19**. The vaccines are [safe and effective](#) and will protect the student and other members of the Texas Tech community.
- **Masks will not be required for either indoor or outdoor activities on campus, however, all visitors to the Student Health Clinic will be required to wear a mask.** The wearing of masks while in public indoor settings and frequently washing your hands has proven to be effective at preventing the spread of COVID-19.
- The CDC recommends that both vaccinated and unvaccinated individuals wear a face mask indoors after a known exposure.
- Prior to arrival on campus, all **unvaccinated students** in university housing should develop an action plan in the event they are required to self-isolate or quarantine due to a positive COVID-19 diagnosis or exposure. This plan should include a location to complete the self-isolation/quarantine period, access to groceries/meal delivery, access to necessary medications, numbers of emergency contacts, and contact information for their preferred healthcare provider.
- **Fully vaccinated students** who aren't experiencing symptoms will not be required to [quarantine](#) following an exposure to a COVID-19 positive person, including roommates. Following a known exposure, students should monitor for symptoms over the course of 14 days and quarantine if [symptoms](#) develop.
- **Fully vaccinated students** who receive a positive diagnosis for COVID-19 will be required to [self-isolate](#). Students that are vaccinated, including those with medical and religious exemptions, and live in university housing will be provided with a location to complete the self-isolation period. If an off-campus

location is necessary, the university will cover the associated housing expenses.

- **Unvaccinated or undisclosed students** who have been identified as having a known exposure to a COVID-19 positive person will be required to [quarantine](#) for a minimum of 7 days or longer depending upon testing. If a student is unvaccinated and can prove a COVID-19 diagnosis and recovery in the last three months, quarantine will not be required.
- **Unvaccinated or undisclosed students** who receive a positive diagnosis for COVID-19 will be required to [self-isolate](#). The university will offer information regarding off-campus options for unvaccinated students that reside in university housing to complete the self-isolation period but will not cover any associated expenses.
- **Any student** who has a laboratory confirmed case of COVID-19 must use this [link](#) to report.
- Students who have a high-risk exposure to someone with confirmed or suspected COVID-19 in the last 2 weeks should access the online reporting platform to take a “quick assessment” or “full self-screening.” Based on responses, automated messages provide contact information for campus/clinic resources, emergency room precautions, or planning observation.
- **Students who are fully vaccinated and want to participate in the vaccination incentive opportunity may submit their vaccination record to Student Health Services using the Submit Vaccination Record button at <https://www.depts.ttu.edu/communications/emergency/coronavirus/>.**