

# Mathematics 2450 sec. 111, Calculus III with Applications, Fall 2024

## COURSE SYLLABUS

Meeting: MWF 3:00-4:15pm CHEM 107

**Instructor:** Erhan Guler, Professor

**Office Hours:** Face to Face MWF 2:00-3:00pm, by appointment

**email:** [eguler@ttu.edu](mailto:eguler@ttu.edu)

**Calculus III's coordinator:** Eugenio Aulisa, Professor (email: [eugenio.aulisa@ttu.edu](mailto:eugenio.aulisa@ttu.edu))

**All lectures will be delivered in person and will include introducing concepts, emphasizing important aspects of the theory, and providing examples. Lecture notes will also be uploaded regularly.**

**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 asses 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: Wed, Sep 18,	MATH 111	worth 15% of the final grade
	Exam #2: Wed, Oct, 16,	MATH 111	worth 20% of the final grade
	Exam #3: Wed, Nov 13,	MATH 111	worth 20% of the final grade
	Final Exam: TBO (to be announced),	MATH 111	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.

**Accommodation for Pregnant Students.** Any pregnant student will be provided with supportive measures as would be provided to a student with a temporary medical condition including:

1. ability to maintain a safe distance from hazardous substances, areas, or activities;
2. excused absences;
3. ability to make up missed assignments or assessments;
4. additional time for assignment completion; and access to instructional materials and recordings of classes for which the student has an excused absence.

Any student who is pregnant or parenting a child up to age 18 may contact Texas Tech's designated Pregnancy and Parenting Liaison to discuss support available through the University. The Liaison can be reached by emailing [titleix@ttu.edu](mailto:titleix@ttu.edu) or calling 742-7233.

Please note the following important dates: **September 9**, last day for student-initiated drop without a penalty, (drop does not count against drop limit); **November 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 2024-2025 [official calendar](#) for detailed information.

**Course Outline**

Chapter 9 (review 9.1-4, cover 9.5-9.7)  
Chapter 10 (10.3, 10.5 are optional)  
Chapter 11  
Chapter 12 (12.6 is optional)  
Chapter 13

Vectors in Plane and in Space	6 hours
Vector-Valued Functions	5 hours
Partial Differentiation	11 hours
Multiple Integration	12 hours
Vector Analysis	11 hours