MATH 3415 001/L01 and V01/VL1 **Fall 2025**

Calculus III

Time: MW 12:30 – 1:20, TR 12:30 – 1:45
Room: ACR 206

Instructor: Eric Funasaki
Office: ACR 109C (MW 3:30 – 5, TR 2 – 3)
BAB 210 (MTWRF 8 – 11:30, TR 3 – 5, F 12:30 – 5)
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Office hours:

MW 3:30 – 5, TR 2 – 3, or by appointment.

Textbook:

Calculus: Concepts & Contexts, 4th edition, by James Stewart.

Course Description:

This course includes the study of the calculus of functions of several variables and topics in vector calculus including line and surface integrals, Green's Theorem, Divergence Theorem, and Stokes' Theorem.

Prerequisite:

Math 2414 Calculus II.

Mathematics Program Student Learning Outcomes:

The student will be:
1. Able to demonstrate content knowledge of basic mathematical principles;
2. Proficient in logic, able to negate statements, provide counterexamples to false statements, and determine the validity of arguments; and
3. Able to communicate mathematical content clearly and with valid reasoning.

Course Objectives:

The student will be able to:
1. Find the derivative and evaluate integrals of vector functions;
2. Find the limit and partial derivative of functions of several variables;
3. Evaluate double and triple integrals of functions of several variables;
4. Evaluate line integrals using the Fundamental Theorem for Line Integrals; and
5. Use Green's Theorem to evaluate line integrals.

Marketable Skills:

1. Students demonstrate logical and analytical skills.
2. Students demonstrate problem-solving using analytical and algebraic methods.
3. Students use technology in problem-solving and presentation.
4. Students use communication and pedagogical skills.

Course Assessment:

Your grade will be based on the following components:

10% In-class problems and participation
20% Homework assignments and quizzes
48% Exams
22% Comprehensive Final Exam

The grading scale will be:

90 – 100 A 80 – 89 B 70 – 79 C 60 – 69 D 0 – 59 F

Course Schedule (tentative):

Week 1

8/25	M	9.1 Three-Dimensional Coordinate Systems, 9.2 Vectors
8/26	T	9.2 Vectors
8/27	W	9.3 The Dot Product
8/28	R	9.3 The Dot Product , 9.4 The Cross Product

Week 2

9/1	**M**	**Labor Day (no class)**
9/2	T	9.4 The Cross Product
9/3	W	9.5 Equations of Lines and Planes
9/4	R	9.5 Equations of Lines and Planes, 9.6 Functions and Surfaces

Week 3

9/8	M	9.6 Functions and Surfaces
9/9	T	9.7 Cylindrical and Spherical Coordinates
9/10	W	9.7 Cylindrical and Spherical Coordinates, 10.1 Vector Functions and Space Curves
9/11	R	10.2 Derivatives and Integrals of Vector Functions

Week 4

9/15	M	10.2 Derivatives and Integrals of Vector Functions
9/16	T	10.4 Motion in Space: Velocity and Acceleration
9/17	W	10.4 Motion in Space: Velocity and Acceleration
9/18	R	11.1 Functions of Several Variables

Week 5

9/22	M	Review for Exam 1
9/23	**T**	**Exam 1**
9/24	W	11.1 Functions of Several Variables
9/25	R	11.2 Limits and Continuity

Week 6

9/29	M	11.2 Limits and Continuity
9/30	T	11.3 Partial Derivatives
10/1	W	11.3 Partial Derivatives
10/2	R	11.4 Tangent Planes and Linear Approximations

Week 7

10/6	M	11.4 Tangent Planes and Linear Approximations
10/7	T	11.5 The Chain Rule
10/8	W	11.5 The Chain Rule
10/9	R	11.6 Directional Derivatives and the Gradient Vector

Week 8

10/13	M	11.6 Directional Derivatives and the Gradient Vector
10/14	T	11.7 Maximum and Minimum Values
10/15	W	11.7 Maximum and Minimum Values
10/16	R	11.7 Maximum and Minimum Values

Week 9

10/20	M	Review for Exam 2
10/21	**T**	**Exam 2**
10/22	W	12.1 Double Integrals over Rectangles
10/23	R	12.2 Iterated Integrals

Week 10

10/27	M	12.2 Iterated Integrals, 12.3 Double Integrals over General Regions
10/28	T	12.3 Double Integrals over General Regions
10/29	W	12.3 Double Integrals over General Regions
10/30	R	12.4 Double Integrals in Polar Coordinates

Week 11

11/3	M	12.4 Double Integrals in Polar Coordinates
11/4	T	12.7 Triple Integrals
11/5	W	12.7 Triple Integrals
11/6	R	12.7 Triple Integrals

Week 12

11/10	M	12.8 Triple Integrals in Cylindrical and Spherical Coordinates
11/11	T	12.8 Triple Integrals in Cylindrical and Spherical Coordinates
11/12	W	12.8 Triple Integrals in Cylindrical and Spherical Coordinates
11/13	R	13.1 Vector Fields, 13.2 Line Integrals

Week 13

11/17	M	Review for Exam 3
11/18	**T**	**Exam 3**
11/19	W	13.2 Line Integrals
11/20	R	13.3 The Fundamental Theorem for Line Integrals

Week 14

11/24	M	13.3 The Fundamental Theorem for Line Integrals
11/25	T	13.4 Green's Theorem
11/26	**W**	**Thanksgiving (no class)**
11/27	**R**	**Thanksgiving (no class)**

Week 15

12/1	M	13.4 Green's Theorem
12/2	T	13.4 Green's Theorem
12/3	W	Review for Final Exam
12/4	**R**	**Dead Day (no class)**

Week 16

12/10	**W**	**Final Exam (10:15 am – 12:15 pm)**

Attendance:

Role will be taken. You are responsible for all material covered in class as well as any assignments and announcements that are made. If you miss an assignment, exam, or quiz you will receive a grade of zero unless I have been notified in advance.

Sul Ross State University policy is to drop a student with a grade of W or F when 9 hours of class are missed. For this course that is when you miss **6** to **9** classes.

Cheating:

Cheating will not be tolerated. Anyone caught cheating will receive a grade of zero on that assignment. This includes homework assignments where the student who copied another student's work and the student who allowed their work to be copied will both receive a grade of zero.

Cell Phones and Other Electronic Devices:

Your cell phone must be **off** while you are in class. You may not read or send text messages while class is in session. If there is an unusual situation where you simply must be able to read and send a message without delay, please place your phone in vibrate mode and leave the room before reading and responding. No other electronic devices may be used during class without the permission of the instructor.

Use of Generative Artificial Intelligence (AI):

In this course, every element of class assignments must be fully prepared by the student. The use of generative AI tools for any part of your work will be treated as plagiarism. If you have questions, please contact me.

Student Responsibilities Statement:

All full-time and part-time students are responsible for familiarizing themselves with the Student Handbook and the Undergraduate and Graduate Catalog and for abiding by the University rules and regulations. Additionally, students are responsible for checking their Sul Ross email as an official form of communication from the university. Every student is expected to obey all federal, state, and local laws and is expected to familiarize themselves with the requirements of such laws.

ADA Statement:

Sul Ross State University (SRSU) is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact Mrs. Mary Schwartze Grisham, LPC, SRSU's Accessibility Services Director or Ronnie Harris, LPC, Counselor, at 432-837-8203 or email mschwartze@sulross.edu or ronnie.harris@sulross.edu. Our office is located on the first floor of Ferguson Hall, room 112, and our mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832.

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