MATH 251 Multivariable Calculus
Fall 2025

Instructor	Dr. Kevin Milans, Associate Professor
E-mail	milans@math.wvu.edu
Office Hours	NRC 125: Wednesday 4pm-5pm;
	ARM 408H: TuTh 11am-noon, or by appointment

General Course Information
Method of Instruction: lecture
Credit Hours: 4
Course Prerequisites: MATH 156 with a grade of C- or better

Textbook
Calculus: Early Transcendentals, 8th Edition, by James Stewart

This is the same textbook that is currently used in Math 153, 154, 155, and 156. Instead of purchasing a hard copy, you are welcome to use the e-book, which is automatically available through WebAssign (see required course materials below).

Course Description
Introduction to solid analytic geometry, vector algebra, and calculus of several variables.

Major Topics
- A Brief Introduction to Linear Algebra
- Vectors and the Geometry of Space
- Vector Functions
- Partial Derivatives and Applications
- Multiple Integrals
- An Introduction to Vector Calculus

Expected Learning Outcomes
1. Calculate the determinant of a matrix
2. Solve a system of linear equations using Gaussian elimination
3. Perform standard operations on vectors in two-dimensional and three-dimensional space and use these operations to analyze a given circumstance
4. Identify, construct, and roughly sketch/describe lines, planes, and quadric surfaces in three-dimensional space
5. Apply the calculus techniques of differentiation and integration to solve problems involving vector-valued and multivariable functions
6. Identify and analyze vector fields
7. Evaluate line integrals (with and without Green's Theorem)

Course Outline
This is a tentative plan for the semester, but may change as needed. Check the live course calendar for the most up to date information.

Week 1*	Intro to Matrices, Intro to Solving Systems of Equations, Solving Systems of Equations
Week 2	Solving Systems of Equations, Finding the Determinant, 12.1, 12.2
Week 3*	12.3
Week 4	12.4, 12.5, 12.6
Week 5	12.5, 12.6
Week 6	Exam 1, 13.1, 13.2
Week 7	13.3, 14.1
Week 8*	14.3, 14.4, 14.5
Week 9	14.4, 14.5, 14.6, 14.7
Week 10	14.7, Exam 2
Week 11	15.1, 15.2, 15.3
Week 12	15.3, 15.4, 15.6
Week 13	15.7, 15.8
Week 14	15.8, Exam 3
Week 15	16.2, 16.2, 16.3
Week 16*	16.3, 16.4

*Not full weeks

Structure of the Course
This course is a synchronous in-person course that meets MWF each week. Class time will be a mixture of traditional lecture and active learning, involving group work and independent work. You should expect to DO something during every class, not just sit and take notes.

Course Communication
In this course, I will be communicating with you via email regularly. You should check your @mix.wvu.edu email **daily** for updates. Please feel free to email me at milans@math.wvu.edu any time you have questions about course material, course expectations, deadlines, assignments, etc.

Required Course Materials
Crowdmark
Quiz and exam grading will be done using Crowdmark, an online grading platform. There is no cost for students. Assessments graded using Crowdmark will be returned to you electronically. If you have any questions or concerns about electronic grading, you will have three days after the assessment is returned to dispute your grade. Three days after the assessment is returned, you will have no further opportunities to dispute any grading/uploading issues. All paper copies of assessments will be shredded at the end of the semester.

WebAssign
You are required to purchase access to WebAssign for this class. Everyone has free access for two weeks, but fees must be paid by the end of the second week of classes. If you purchased multi-semester access in 155, 156, or a previous attempt at 251, you should be able to continue using it without needing to pay again. If you have trouble, let me know.

To log into WebAssign, go to eCampus and select this course. Click the link in the left toolbar that says "WebAssign." If you have a WebAssign account from a previous class and purchased multi-semester access, but did NOT log into WebAssign using eCampus, you will need to link the two accounts. You should have an option to do this in WebAssign or you can contact WebAssign

tech support. **If you previously used WebAssign for any calculus course at WVU, you should not need to pay again.**

Calculators
Calculators are allowed for homework.
Calculators are **NOT** allowed for exams and quizzes.

Attendance Policy
Regular class attendance is important for a successful learning experience. Although not a formal part of your course grade, attendance may be taken. It is your responsibility to attend class for your own benefit.

Course Components
Exams
This course will have three mid-semester exams and one comprehensive final exam. All exams are written exams. Mid-semester exams will take place during regularly scheduled class time in the regularly scheduled classroom. The final exam will be on **Monday, December 15 from 8pm-10pm** in a location to be determined. Mid-semester exam dates are clearly marked on the course calendar, but dates are subject to change as the semester progresses.

In this course you will be graded not only on your ability to obtain the correct answer to a problem, but also on your ability to use the problem-solving methods taught *in this course* and your ability to justify your work. A correct answer without supporting work or with supporting work using techniques from outside of this course will be given no credit. I encourage you to explore and learn new things! However, any strategies you use that are not from the textbook or the provided course material should be justified or explained before being used.

Quizzes
I assign homework problems from the textbook, but do not collect them. The textbook problems are for learning, not for grading. There will be quizzes, held roughly once each week on Friday (but see the course calendar for exceptions). Quiz dates are subject to change.

In general, a quiz covers material from just after the coverage on the previous quiz through to the second to last class before the quiz. In other words, material covered in class before the quiz will typically not be on that week's quiz (unless specifically announced), but it may be on the quiz the following week.

To help prepare for the quizzes, there is a link to the "Quiz Focus Problems" document at the top of course calendar. The focus problems do not provide exhaustive coverage of all topics that may appear on a quiz. However, the Quiz Focus Problems can serve as a good starting point for studying key concepts. If you stay up to date on these focus problems (focusing on understanding, not rote memorization), your quiz scores should reflect that.

In lieu of offering make-up quizzes all semester long, I will drop the two lowest quizzes for everyone at the end of the semester, whether you missed them for sickness, weddings, funerals, bad decisions, etc.

Homework

You will have several WebAssign homework assignments each week. Deadlines will typically be on Tuesday/Thursday/Sunday (though not always). You are responsible for staying up to date on the deadlines. **You will have 10 attempts per question unless notified otherwise.**

If you miss a WebAssign deadline, you have 24 hours to request an **automatic** extension of 24 hours. You will receive **70% credit for any work completed during the extension window** (full credit for anything completed before the deadline). No other extensions will be given.

You can receive 5% bonus for any homework problems submitted at least 24 hours before the deadline.

Grading

In this course you will be graded not only on your ability to obtain the correct answer to a problem, but also on your ability to use the problem-solving methods taught in this course and your ability to justify your work. A correct answer without supporting work will be given no credit.

Grade Distribution	
Three Mid-semester Exams	54%
Homework (WebAssign & Crowdmark)	6%
Quizzes	15%
Final Exam	25%
Total	**100%**

Grading Scale	
90% and above	A
80%-89.9%	B
70%-79.9%	C
60%-69.9%	D
Below 60%	F

Exam Replacement Policy

If it helps your grade, your final exam grade can also be used to replace your **one** lowest regular exam score.

Missed Exams

If you will miss an exam, then you must have a valid excuse and you must notify me (1) as soon as you become aware of a need to miss an exam, and (2) at least one week before the exam. Alternative exam times may be scheduled only before the regular exam is administered.

If you miss one exam due to an excused, unforeseen circumstance (e.g. illness), then this will be the exam that your final exam grade replaces. In the unlikely event that you miss more than one exam due to multiple excused, unforeseen circumstances, then the first missed mid-semester exam will be replaced by the final exam, and make-up exams will be scheduled for any additional mid-semester exams missed due to excused, unforeseen circumstances. All exams are taken in-person.

Extenuating Circumstances

If you have any questions or concerns, please first talk to me, your instructor. **If you would like to speak to someone other than me, please contact the Director of the Institute for Mathematics Learning, Dr. Lori Ogden. Her email is lori.ogden@mail.wvu.edu.**

Academic Integrity

If I have reason to suspect that the work you are turning in is not the result of your own logical thinking skills and thought processes, I will utilize the Office of Academic Integrity to press charges. If any of your work is suspicious, I reserve the right to a video conference with you for a "knowledge check" to be sure that the work submitted was your own.

Academic integrity is a core value. Therefore, instructors will enforce rigorous standards of academic integrity in all aspects and assignments of their courses. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the West Virginia University Academic Standards Policy. **Should you have any questions about any activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.**

Sale of Course Materials

All course materials, including video lectures, class notes, worksheets, exams, handouts, presentations, and other materials provided to students for this course are protected intellectual property. As such, the unauthorized purchase or sale of these materials may result in disciplinary sanctions under the Campus Student Code.

Inclusivity Statement

The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in your classes, please advise your instructors and make appropriate arrangements with the Office of Accessibility Services. (https://accessibilityservices.wvu.edu/)

More information is available at the Division of Diversity, Equity, and Inclusion (https://diversity.wvu.edu/) as well.

Student Evaluation of Instruction

Effective teaching is a primary mission of West Virginia University. Student evaluation of instruction provides the university and the instructor with feedback about your experiences in the course for review and course improvement. Your participation in the evaluation of course instruction is both strongly encouraged and highly valued. Results are strictly confidential, anonymous, and not available to the instructor until after final grades are released by Admissions and Records. Information about how you can complete this evaluation will be provided later.

This syllabus is subject to change. Please see eCampus for the most up-to-date version.