

**Instructor information:**

Instructor: Dr. Allison H. Moore

Office: Harris Hall 4149 (I am working remotely this semester)

Office hours: To be held over Zoom

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**Course information:**

MATH 307 - 005. Multivariate Calculus (Mathematics).

Term: Spring Semester, 2021. CRN: 33264

Class Meetings: 1:00 pm - 2:15 pm MW, 1:00 pm - 1:50 pm F, Course taught online

**Online meetings and course design:**

This course is designed so that it can be done entirely remotely. Course lectures will be delivered by Zoom and lecture notes will be posted online. Homework assignments will be done through MyMathLab, which also provides access to an eBook. Quizzes and exams will be assigned and submitted online.

Part of this course is intended to be taken synchronously, meaning in “real-time.” The synchronous part of the course happens during MWF Zoom meetings. We will use our online time together to ask and answer questions, to work with other students on practice problems, and for periodic Friday quizzes. Attendance during our weekly meetings is highly recommended. All real-time online meetings will be conducted via Zoom at the following URL/Meeting ID:

<https://vcu.zoom.us/j/97895146289>

Meeting ID: 978 9514 6289

Another part of the course is intended to be conducted asynchronously. The asynchronous part includes homework assignments, for which the deadlines are flexible, and at-home exams. I realize that many of you may experience schedule disruptions and a higher level of stress than usual. To help accommodate for the difficulty of trying to learn online during the pandemic, I will post video recordings of Zoom lectures along with PDF exports of the notes created during Zoom sessions. So even if you encounter setbacks, materials will be available to help you stay on track.

**Prerequisites:**

MATH 201 with a minimum grade of C.

**Required Materials**

You will need access to the following:

- **Access to the Canvas site.** Important announcements, a copy of the syllabus, lecture notes, study guides, homework and quizzes and take-home exams will all be posted to Canvas. Check this website regularly and make sure you receive email announcements from Canvas.

- **Access to MyMathLab** for web-based homework assignments. MyMathLab is integrated into Canvas, but requires an access code. MyMathLab gives you access to an electronic version of the textbook.
- **Access to the textbook:** Briggs' Calculus: Briggs' Calculus, Early Transcendentals, Third Edition, Pearson. (There is no need to buy a hard copy if you can effectively use the online version supplied with MyMathLab.)

If you took either MATH 200 or MATH 201 at VCU, you probably already have access to the above materials. Otherwise you have three options for purchasing them. The simplest is to purchase MyMathLab/e-text access directly from MyMathLab. Alternatively, you can purchase the MyMathLab Student Access Kit from the VCU bookstore. The third option is to buy the hard copy of the textbook that comes with MyLabMath access from the VCU bookstore. This is the most expensive option.

There is typically a 14-day free trial, where students can access MyMathLab. Be aware though, that you must purchase access to the online homework system through one of the above methods within that trial period.

## Learning Objectives

The goal of this class is to help develop your skills and comprehension of multivariate calculus, and to build your mathematical background so you can become successful and competent in your chosen major. The course builds upon what you learned in MATH 200 and MATH 201: differentiation and integration of single variable functions. MATH 307 extends these notions to functions of more than one variable. We will cover partial derivatives, multiple integrals, line integrals, surface integrals and curvilinear coordinates. Following this we will study Lagrange multipliers and the theorems of Green, Gauss and Stokes. We will also touch on applications of multivariate calculus.

## Homework

Online homework is to be accessed and submitted for automatic grading with MyMathLab. Homework will be assigned every week, and will be due the following week. Late homework will be accepted, but may be subject to light penalties if very late.

Even though homework is online, I still recommend that you work out these problems with paper and pencil, and keep track of your work in a folder or binder with your class notes. Remember that homework is mainly for practice to help you understand the material, and you may want to review your work when studying for exams. You are **encouraged** to work with other students on the homework, and to discuss your work and solutions to homework with others before submitting. Homework is for practice, and talking to others will help you learn the material.

## Real-Time Quizzes

We will have quizzes approximately 6 times throughout the semester on Fridays. Quizzes will be timed, and conducted over Canvas and/or MyMathLab in real-time, during our Friday 9am meetings. Quizzes will be short, easier than test questions, and designed to keep you up to speed. The quiz may be formatted in several different ways: through Canvas, through MyMathLab, or

through file upload. All of the quiz scores will be averaged together. The quiz average is worth the same as a midterm. The quiz schedule will be posted to Canvas as part of our general class schedule.

### Real-Time Group Work

Alternating with quizzes, we will have group work practice problems weekly. Group work is highly recommended. Although participation in group-work break out sessions is not strictly required, I may offer extra credit points for group work participation.

### Exams:

All exams for this course (midterms and the final) will be conducted as “take-home” exams. A PDF of the exam will be posted to Canvas, and students will be given a broad time frame to complete the exam. These exams are to be completed either on paper, or on a tablet with a stylus. Your handwritten exam solutions, formatted as a PDF, will be returned by online submission. I will be creating at-home exams that are designed to be open-book, open-notes and with calculators permitted, restricted to our own course materials. The use of the internet, or any other method of asking for and receiving help from another individual or resource will be strictly forbidden on these exams. **You are NOT allowed to post exam questions anywhere online, including but not limited to the websites Stackexchange, Chegg, Quora, Slader, Coursehero or on social media.** Doing so is considered cheating, and the penalties for being caught cheating can be quite severe. Be aware that many of these websites now cooperate with universities to provide information about users and account activity.

The final exam will also be conducted as take-home exam. Final exam times are set by VCU here: <https://rar.vcu.edu/exams/index.html>.

Midterm 1	Monday, February 22	at-home exam
Midterm 2	Friday, March 26	at-home exam
Midterm 3	Friday, April 23	at-home exam
Final Exam	Friday, May 7	at-home exam

**Make-up exams** If you miss an exam and have a documented or otherwise valid excuse, I will work with you to coordinate a make-up exam. Likewise, if the final exam for our class creates a conflict with your other take-home exams, I will work with you to find an alternate time.

### Grades:

Your grade will be determined by the following:

Homework	20%	Averaged together	Lowest score dropped
Quizzes Average	20%	Averaged together	
Midterm 1	20%	Non-cumulative exam	
Midterm 2	20%	Non-cumulative exam	
Midterm 3	20%	Non-cumulative exam	
Final	20%	Cumulative exam	Not dropped
Group work participation		Bonus	

**About curves:** The default bracketing of letter grades is as follows:  $A : 90 - 100\%$ ,  $B : 80 - 89\%$ ,  $C : 70 - 79\%$ ,  $D : 60 - 69\%$ , and  $F : 0 - 59\%$ . You should plan on estimating your progress throughout the semester with this letter grade distribution.

Depending on the severity of the midterms and final exam performance, I may choose to apply a “curve” at the **end of the semester**. What this means is that I reserve the right to adjust the letter grade brackets. However, your letter grade will **never** drop below the initial generic bracketing. While my typical curve might improve your letter grade over the raw numerical score, it usually doesn’t change the grade much. In general, it is not a good strategy to count on the curve to raise your grade. The instructor reserves the right to offer bonus or extra-credit assignments.

### Asynchronous content and pacing

This course is designed to be flexible and entirely remote in order to accommodate disruptions to your health or schedule. It is more important than ever to stay on top of the course material and to manage your time accordingly. Self-pacing is absolutely critical. Attendance during weekly Zoom meetings is highly recommended. If you miss a lecture, watch videos the videos and read the lecture notes. Doing many practice problems is key to succeeding in a calculus class. Plan to devote *at least* 7 hours per week study, doing homework problems and other practice problems.

### Tips for Success:

- Make yourself a calendar with all of your due dates across ALL of your courses. Plan for when you will work on each one for completion in advance of the due dates.
- Add Zoom/online meetings to your weekly calendar.
- Avoid the common assumption that online courses are easier. Learning online is difficult!
- Plan ahead: Study as you go instead of at the last minute. Keep a tidy folder, spiral or binder of your notes and your homework solutions that you can use when studying for midterms and the final.

### Academic Help:

Our Zoom meetings are your first stop. I am happy to answer questions, work examples and help you understand the homework. I can also do this in a one-on-one Zoom appointment or during office hours.

The Campus Learning Center at VCU offers appointment, drop-in and group tutoring in undergraduate courses across the disciplines: <https://clc.vcu.edu/tutoring/>

### Honor System: upholding academic integrity

The VCU Honor System policy describes the responsibilities of students, faculty and administration in upholding academic integrity. According to this policy, “Members of the academic community are required to conduct themselves in accordance with the highest standards of academic honesty, ethics and integrity at all times.” Students are expected to read the policy in full and learn about requirements here: <https://conduct.students.vcu.edu/vcu-honor-system/>

## **Our shared learning environment**

I want you to know that I am grateful for your presence and appreciate your input in our online class. You are welcome here, and our diverse backgrounds make us stronger together. I am dedicated to providing a welcoming and inclusive environment for all students, independent of your immigration status, country of origin and/or citizenship, race, ethnicity, religious affiliation, gender/sex, gender identity, sexual orientation, age, ability or disability, socioeconomic status, or perspective. Thank you for joining my class and bringing your unique experience and background to our intellectual community.

## **Students with disabilities:**

Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, as amended, require that VCU provide "academic adjustments" or "reasonable accommodations" to any student who has a physical or mental impairment that substantially limits a major life activity. To receive accommodations, students must register with the Office of Student Accessibility and Educational Opportunity on the Monroe Park Campus (828-2253) or the Division for Academic Success on the MCV campus (828-9782). Please also visit the Student Accessibility and Educational Opportunity website via <https://saeo.vcu.edu/> and/or the Division for Academic Success website via <https://das.vcu.edu/> for additional information.

Once students have completed the registration process, they should schedule a meeting with their instructor (s) and provide their instructor (s) with an official accommodation letter. Students should follow this procedure for all courses in the academic semester.

## **Requesting accommodations**

The university recognizes that some students who previously did not need Section 504 Academic Accommodations, and who have a qualifying condition or disability, may need support or assistance during the return to campus process. A modified approach for the temporary and more permanent need for accommodation has been developed and implemented to provide students with full access to programs and activities related to their academic majors. Because every case is different, student requests are evaluated on a case-by-case basis. Please share your need for an accommodation with the Student Accessibility and Education Office, or for MCV Campus students, the Division for Academic Success, after you have worked directly with your faculty member.

## **Extended Syllabus:**

Students should visit <http://go.vcu.edu/syllabus> and review all syllabus statement information. The full university syllabus statement includes information on safety, registration, the VCU Honor Code, student conduct, withdrawal and more.