

MATH 2310-200: CALCULUS III SPRING 2019

1. COURSE BASICS

Instructor: Bogdan Krstić

Office: Kerchof 121

Office hours: Mo 2:15-3:15 PM, Th 1-2 PM, and
by appointment (at least a day ahead of time).

Email: bk2fh@virginia.edu

Course website: Available on UVaCollab

Classroom: Clark Hall 101

Meeting time: MoWe 3:30-4:45 PM, Th 8-8:50
AM

TA: Shunyu Wan

TA office: Kerchof 402

TA office hours: Tu 3:30-4:30 PM, Fr 2-3 PM

TA email: sw6vm@virginia.edu

CRN: 10642

Credits: 4

2. PREREQUISITES

MATH 1320 or the equivalent.

3. COURSE OVERVIEW

The course studies the calculus of multivariable functions, with an emphasis on using geometric intuition to understand the two and three variable cases. Roughly the five chapters correspond to the topics:

- Describing objects in two and three dimensions using vectors. Some useful computational devices: the dot product, determinants, the cross product. Understanding lines, planes and quadric surfaces.
- Vector valued functions (a.k.a. parameterized curves) and their derivatives. Tangent lines to curves. Physical and geometric interpretation.
- Differentiation of multivariable functions. Partial derivatives. Tangent planes to surfaces. The multivariable chain rule. Maximization problems, with and without constraints.
- Integration of multivariable functions. Iterated integrals and Fubini's theorem. Multivariable substitution (a.k.a. the change of variable formula), particularly how this works in the classical coordinate systems.
- Vector fields. The gradient, curl and divergence. Line integrals and surface integrals. The higher dimensional 'fundamental theorems of calculus': Green's Theorem, Stokes's Theorem and Divergence Theorem.

4. PLACEMENT

Is this the right calculus class for you? Read the Mathematics Department's [Placement Information](#).

5. COURSE TEXT

The course text is *Multivariable Calculus*, 8th edition, by James Stewart (Publisher: Brooks/Cole Cengage Learning). The course will cover nearly all the material in Chapters 12 – 16.

An electronic edition of the text is provided through the online homework system WebAssign, to which you must purchase access. Acquisition of a physical copy of the text is optional. You have a number of different purchase options:

- (1) purchase WebAssign single-term access online through the WebAssign website,
- (2) purchase a single-term WebAssign-access card at the UVA Bookstore,
- (3) purchase a physical copy of the text, bundled with a multi-term WebAssign-access card, at the UVA Bookstore, or
- (4) purchase WebAssign via (1) or (2) and, if you want a hard-copy of the text, buy a used copy.
- (5) purchase [Cengage Unlimited](#)

There is a two week grace period at the beginning of the term during which you have free WebAssign access to the text as well as course homework sets. Go to webassign.net/uva/login.html and enter our class key: **virginia 3177 7024**.

6. ASSESSMENTS

6.1. Homework. You will be completing both on-line homework and written homework. Online homework will be delivered through WebAssign (webassign.net/uva/login.html).

Because the WebAssign system will evaluate only your final answers, it is important that you have opportunities (other than on quizzes and exams) to have your work evaluated as well your final answers. Thus, roughly every week, I will collect written homework, which will be due at the beginning of the Wednesday classes. I strongly encourage you to work in groups (of up to four students) on written homework assignments. Research shows that students learn more and learn more deeply when they discuss their problem-solving ideas with other students (as well as evaluate other students' problems-solving ideas). If you choose to work in a group, you still must write up your own final solutions; moreover, in the top margin of the first page of your submission, you must record the names of your partners. **Assignments should be cleanly and legibly written, and stapled.**

If you contact me at least 24 hours (exceptional circumstances aside) before a WebAssign assignment is due, you may obtain an extension without any penalty. You may also obtain automatic extensions via WebAssign on your homework if the above 24 hour deadline has passed; you will receive a 25% penalty on problems you have not completed before the usual homework deadline, and you will have 48 hours after the time the assignment is due to obtain such an extension. Prior arrangements aside, late written homework will not be accepted, and makeup assignments will not be given. Your lowest written homework score will be dropped.

6.2. Quizzes. Quizzes will be given during Thursday discussion meetings, and will be fifteen minutes long. In computing your final quiz average, your lowest quiz score will be dropped.

6.3. Exams. There will be two in-class midterm exams given during the semester. Exam will not be rescheduled due to travel plans, except for university-sanctioned activities. The dates of these exams are as follows:

- **Midterm Exam 1:** Monday, March 4th
- **Midterm Exam 2:** Monday, April 8th

If you have a direct conflict with either of the above listed exam times, please notify me as soon as possible AND at least one week before the exam date. If proper notice cannot be given, then a request for the make-up exam will be honored only in cases of extreme emergencies.

The **final exam** will be held during the time specified by the university, which this semester is Saturday, May 4th, 2:00-5:00 PM. It is University policy that finals may not be taken early. The final exam is comprehensive.

7. COURSE GRADE

The course grade will be determined as follows:

Written homework	10 points
Online homework	10 points
Quizzes	10 points
Midterm 1	20 points
Midterm 2	20 points
Final exam	30 points
Total	100 points

The grading scale for the course is:

Grade	Percentage
A+	[98,100]
A	[93, 98)
A-	[90, 93)
B+	[87, 90)
B	[83, 87)
B-	[80, 83)
C+	[77, 80)
C	[73, 77)
C-	[70, 73)
D	[60, 70)
F	[0, 60)

8. POLICIES

8.1. Attendance and classroom etiquette. Regular attendance is expected as is full engagement in classwork activities. Please arrive on time, turn off your cell phone, and stay for the entire class period. You may not use any electronic device during class. Studies suggest that student multi-tasking during class through use of smart phones and laptops hinders classroom learning for both users and nearby peers.

8.2. Learning needs. UVA is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning in this course, please feel welcome to discuss your concerns with me. If you have a disability, or think you may have a disability, you may also contact the Student Disability Access Center (SDAC), to request an official accommodation. You can find more information about SDAC, including how to apply online, through their website at <https://studenthealth.virginia.edu/sdac>. If you have already been approved for accommodations through SDAC, please make sure to send me your accommodation letter and meet with me so we can develop an implementation plan. Accommodations for test-taking (e.g., extended time) should be arranged at least 5 business days before an exam.

8.3. Calculators. Calculators will not be allowed on the quizzes, midterms or finals.

8.4. Exam grading concerns. After receiving a graded exam, you have 1 week (7 days) to raise concerns about grading errors.

8.5. Honor Code. The Honor Code will be strictly observed in this class.¹

9. TIPS FOR SUCCESS

- Use class time wisely: fully engage yourself in class activities, asking and answering questions when appropriate.
- Seek understanding rather than trying to rely on memorized formulas.
- Take advantage of your instructor's and TA's office hours as well as the [Mathematics Tutoring Center](#).

10. IMPORTANT DATES (COLLEGE OF ARTS & SCIENCES)

- Classes start: Monday, January 14
- Add deadline: Monday, January 28
- Drop deadline: Tuesday, January 29
- Withdrawal deadline: Monday, March 18
- Last day of classes: Tuesday, April 30

¹Recent honor violations committed by calculus students include: falsifying a doctor's note in order to postpone a scheduled exam; presenting a false excuse for postponing an exam; and, seeking to boost an exam score by correcting mistakes on a graded, returned exam and then reporting "grading errors" on the exam. Note that calculus instructors scan graded exams. Please remember to pledge each quiz and exam.