MATH 20a-1: Multi-variable Calculus

Summer 2026 (Session II)

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Meeting Times & Recitations:

Math 20a will meet **M/T/W/Th, 11:10 - 1:40 pm in Goldsmith 300**.

Required Technology:

We will have homework sets, for which students will upload solutions to Gradescope. Although the solutions may be typed via Latex, a scan of handwritten solutions is also acceptable. As a result, students may need a device with which to scan their assignments. If any of the aforementioned technology poses an issue, please let me know as soon as possible so that we can work out a solution that works for you.

Learning Goals for Math 20a:

1. Identify and apply key ideas and skills of calculus in several variables.
2. Transfer familiar concepts to unfamiliar contexts.
3. Hone your problem solving skills.
4. Develop and leverage a learning community for math.

Prerequisites:

Math 15a (Applied Linear Algebra), or a satisfactory score on the math department's calculus placement self-test:
http://www.brandeis.edu/registrar/newstudent/testing.html

Textbook:

We will be working out of *Calculus*, Volume III, by Gilbert Strang: https://openstax.org/details/books/calculus-volume-3
The textbook is freely available online!

Moodle:

All course materials for Math 20a will be available online on Moodle. Log in at http://moodle.brandeis.edu using your Unet username and password.

Syllabus:

We will cover the following sections from our textbook this semester. **Sections 1.1, 1.2, and 2.1–2.4** are considered **prerequisites.** We will not cover these sections in class.

Note: Some topics may be added or omitted as time permits.

Section	Topic
2.5	Equations of Lines and Planes in Space
3.1	Vector-Valued Functions
3.2	Calculus of Vector-Valued Functions
3.3	Arc Length and Curvature
4.1	Functions of Several Variables
4.2	Limits and Continuity
4.3	Partial Derivatives
4.4	Tangent Planes
4.5	The Chain Rule
4.6	Directional Derivatives & the Gradient
4.7	Maxima/Minima Problems
4.8	Lagrange Multipliers
5.1	Double Integrals over Rectangular Regions
5.2	Double Integrals over General Regions
5.3	Double Integrals in Polar Coordinates
5.4	Triple Integrals
5.5	Triple Integrals in Cylindrical and Spherical Coordinates
6.1	Vector Fields
6.2	Line Integrals
6.3	Conservative Vector Fields
6.4	Green's Theorem
6.5	Divergence and Curl
6.6	Surface Integrals
6.7	Stokes' Theorem
6.8	The Divergence Theorem

Grades:

The following will impact your grade:

Grade item	Weight
Homework	40 %
Midterm 1	20 %
Midterm 2	20 %
Final	20 %

Your letter grade will be calculated using the following table:

Letter Grade	Percentage
A+	95+ %
A	91+ %
A-	88+ %
B+	85+ %
B	81+ %
B-	78+ %
C+	75+ %
C	71+ %
C-	68+ %
D+	65+ %
D	61+ %
D-	58+ %
E	58- %

Resources to Help you Succeed

Office Hours:

This is time that I have set aside explicitly to help you do the homework, review course material, and prepare for exams. Please make use of this resource! You don't have to have questions prepared; you can just show up. See Moodle for details.

Accommodations:

Brandeis seeks to create a learning environment that is welcoming and inclusive of all students, and I want to support you in your learning. If you think you may require disability accommodations, you will need to work with Student Accessibility Support (SAS) (781-736-3470 - access@brandeis.edu - brandeis.edu/accessibility.edu). You can find helpful student FAQs and other resources on the SAS website, including guidance on how to know whether you might be eligible for support from SAS.

If you already have an accommodation letter from SAS, please provide me with a copy as soon as you can so that I can ensure effective implementation of accommodations for this class. In order to coordinate exam accommodations, ideally you should provide the accommodation letter at least 48 hours before an exam.

Academic Integrity:

You are expected to follow the University's policy on academic integrity, which is distributed annually as section 4 of the Rights and Responsibilities Handbook (see http://www.brandeis.edu/studentaffairs/srcs/rr/index.html). Instances of alleged dishonesty will be forwarded to the Department of Student Development and Conduct for possible referral to the Student Judicial System. Potential sanctions include failure in the course and suspension from the University. If you have any questions about how these policies apply to your conduct in this course, please ask.

Timely communication:

Use your Brandeis email to reach out to me. I am usually able to respond quickly to most messages, within 24 hours, although during the weekends and over holidays it could take me longer. If I reach out to you, with a query or comment or in response to an email from you, I would appreciate it if you would acknowledge receipt of my message and/or respond with 24 hours, unless it's during weekend or over a holiday. Note that we will use your Brandeis email address, so you need to check it regularly.

All course announcements can be found in the Course News & Announcements page on Latte.

Name/Pronouns:

If your name and/or pronouns differ from those in your official Brandeis records, please let me know. Thanks!