Welcome to the Summer '21 manifestation of MATH 22 at UC Santa Cruz! This syllabus contains important information about the course. If you are a student, I highly recommend you read the document in it's entirety. Additional information about the course can be found on my webpage.

Basic Course Information

Instructor: Jadyn V. Breland[1] (Pronouns: he/him/his.) **Office Hours:** 1:00PM - 2:00PM (T/Th).

Email: jbreland@ucsc.edu (§Guidelines) **Personal Webpage:** http://jadynbreland.com

Prerequisites: MATH 11B or MATH 19B or MATH 20B or AM 15B or AP calculus BC exam score of 4 or 5.

Textbook: *Active Calculus - Multivariable*, Steve Schlicker. In the spirit of reducing the cost of your education, I have chosen to use this free and open source textbook. You can download the textbook for free or view the .html version. This textbook is by no means traditional: as the title suggests, the student is expected to actively engage with the textbook. There are very few worked examples in the texts, with there instead being 3-4 activities per section that engage students in connecting ideas, solving problems, and developing understanding of key calculus concepts. Everyone will be expected to read the textbook and digest the material in a meaningful way, outside of class. Class meetings will typically be reserved for discussing key ideas and completing the activities, either individually or in groups.

Zoom Meetings: We will have synchronous Zoom meetings every Monday, Wednesday, & Friday from 1:00PM - 3:30PM, except for on June 28 and July 5, which are holidays. **The Zoom room information will be posted on Zulip**. The first meeting is on June 21st, 2021 and the last meeting is on July 21st, 2021. We will not have a meeting on July 23, instead you will be able to use that time to work on the final exam. I will not be recording the meetings. However, any notes from our meetings will be posted on my website. Zoom meetings will typically be reserved for doing mathematics - usually by completing the activities from the assigned readings.

Course Webpage: The course web page is located at https://people.ucsc.edu/~jbreland/teaching/SM21_MATH22.html. Assigned readings and other assignments will typically be posted here. If there are any notes from our meetings, they will be posted here as well.

TA: Xuguang Liu **e-mail:** xliu270@ucsc.edu **TA Office Hours:** 4:00PM - 5:00PM (M/W).

Discussion Sections: 4:00PM - 5:00PM (T/Th). Sections begin the first week of class.

Edfinity: We will use the online homework management system edfinity. You are required to enroll in our course at the following link: https://edfinity.com/join/MBEBM3EC. The cost is $25 per student.[2]

Canvas: The Canvas webpage will be primarily used for hosting grades and administering the exams.

Zulip: We will be using Zulip as a discussion forum for the course. Our forum is located here: https://math22.zulipchat.com/. You will receive an invitation to join via your .edu email. You can use the forum to ask questions to me, your TA, or the class. You can also connect with other students in the class via private messages. Zulip supports basic LaTeX commands, which means you can easily typeset mathematical equations. (§Zulip Guidelines)

Accessibility: I am strongly committed to making my course as accessible as possible. If you encounter materials that are not accessible to you, or experience a barrier to your participation, please bring this to my attention and I will gladly work with you to ensure accessibility. I am also happy to honor any accommodations letters from the Disability Resource Center (DRC) that you would like to confidentially

[1] Please address me by my first name.
[2] Note: I chose Edfinity as an alternative to WebAssign, which costs over $100 per student.

bring to my attention.

Course Content: Functions of several variables. Continuity and partial derivatives. The chain rule, gradient and directional derivative. Maxima and minima, including Lagrange multipliers. The double and triple integral and change of variables. Surface area and volumes. Applications from biology, chemistry, earth sciences, engineering, and physics.

Learning Outcomes: Upon successful completion of the course, students will be able to do the following within the topic of multivariable calculus:

1. Recall the basic definitions, theorems, and techniques of multivariable calculus.
2. Distinguish truth from falsehood and create examples and counterexamples.
3. Competently and confidently solve a variety of problems that require techniques from multivariable calculus.
4. Communicate mathematical ideas and arguments in clear, convincing, and concise language, both written and oral.

Assessment

Assessment Distribution: Your *score* is a nonnegative real number calculated as the weighted average of the following assessments.

- Reading Assignments (10%)

  There will be 11 reading assignments. Reading assignments will be assigned shortly after each class meeting and will be due before the next class meeting. Generally, you will read assigned sections of the textbook, complete the assigned preview activities, and write a brief summary of things that you learned or still have questions about. I may add additional tasks as I see fit. The work to be turned in will be a write-up of the assigned tasks, submitted via gradescope. Reading assignments and due dates will always be posted on the course website. For each reading assignment, you will either receive 1 point (a "Pass") or 0 points (a "No Pass"). You will receive 1 point if you:

  - submit your assignment on time;
  - attempt ~~complete~~ all assigned activities; and
  - make a good faith effort to complete each activity correctly.

  Otherwise, you will receive 0 points. Your lowest score will be dropped. **Note:** If you do not complete the reading prior to class, you will be unprepared to discuss the activities during class meetings. This will severely limit your ability to learn the material.

- Daily Assignments (10%)

  There will be 12 Daily Assignments, which are to be completed during class meetings. You will complete assigned activities from the textbook during class meetings, sometimes on your own, but usually in small groups. You will submit (individually) a write-up of the activities completed in class via gradescope - the deadline is 5:00PM, which gives you some additional time to scan your work after class. For each daily assignment, you will either receive 1 point (a "Pass") or 0 points (a "No Pass"). You will receive 1 point if you:

  - actively participate in the synchronous Zoom meeting;
  - submit your assignment on time;
  - attempt ~~complete~~ all assigned activities; and
  - make a good faith effort to complete each activity correctly.

Otherwise, you will receive 0 points. Your lowest 2 scores will be dropped.

- **Weekly Assignments (40%)**

  There will be 4 weekly homework assignments. Weekly 1 will be due Sunday 6/27 at 11:59PM, and Weekly 2,3,4 will be due on the following Tuesdays at 11:59PM: July 6, July 13, July 20. ~~due on the following Sundays at 11:59PM: June 27, July 4, July 11, and July 18~~[3]. Typically, weekly assignments will consist of 4-6 problems and each problem is graded out of 16 points. Your score for each problem is determined by the grader using the Weekly Assignment Rubric.

  (§Weekly Assignment Guidelines)

- **Edfinity Exercises (10%)**

  There are approximately 180 exercises on Edfinity, each worth one point. These assignments can be completed at any time throughout the course, and will by due by 11:59PM on Friday, July 23. The exercises can be attempted an unlimited number of times. Your grade for this category will be calculated as the number of points earned on Edfinity divided by 80 points. You can earn up to 10 percentage points of extra credit by earning greater than 80 points on Edfinity. You should complete as many problems as necessary to achieve sufficient understanding of the material. It is your responsibility to keep up with the exercises - however, I will post suggested sections to work on each week.

- **Midterm (15%)**

  There will be 1 timed midterm exam. You will have 90 minutes to complete the exam, and 45 minutes to submit your work. It will be released on Friday, July 9 ~~Friday, July 2~~[4] at 3:30PM and due via Canvas on Saturday, July 10 ~~July 3~~[5] at 11:59PM. **Read the detailed exam protocol before beginning the exam.**

  (§Exam Protocol)

- **Final Exam (15%)**

  There will be 1 timed final exam. You will have 180 minutes to complete the exam, and 45 minutes to scan and submit you work. It will be released on Thursday, July 22 at 3:30PM and due via Canvas on Friday, July 23 at 11:59PM. **Read the detailed exam protocol before beginning the exam.**

  (§Exam Protocol)

Submitting Assignments: All reading assignments and weekly assignments must be submitted via gradescope. When you submit your files, you will be prompted to select, for each specified problem or activity, the pages on which the associated work/solution are located. You are required to accurately identify the pages associated to each problem. If you fail to do so, you may receive a "No Pass" (if it is a daily assignment) or you may lose credit for each problem for which the pages are not correctly identified (if it is a weekly assignment).

It is your responsibility to make sure your submission is legible and easy to read. If you submit work that is difficult or impossible to read, you will not receive credit for it, and you will not be allowed to resubmit. There are numerous free smart phone apps that allow you scan your work and save it as a `.pdf`.

Exam Protocol Exams are timed tests. They will be administered using the Canvas quiz tool. Please carefully read the following BEFORE starting an exam:

- **Midterm:** The exam will become available at 3:30PM on 7/9. Once you start the exam, you will have exactly 135 minutes to write your solutions and to scan and submit your work. The exam will become unavailable and submissions will no longer be accepted at 11:59PM on 7/10, regardless of what time

[3] Updated 6/27: change in due dates for weekly assignment 2-4
[4] Updated 6/26: change of midterm release date
[5] Update 6/26: change of midterm due date

you begin. Therefore, you need to start the exam before 9:44PM on 7/10. Use the first 90 minutes to complete the exam, and the remaining 45 minutes to scan and upload your work.[6]

- **Final:** The exam will become available at 3:30PM on 7/22. Once you start the exam, you will have exactly 225 minutes to write your solutions and to scan and submit your work. The exam will become unavailable at 11:59PM on 7/23, regardless of what time you begin. Therefore, you need to start the exam before 8:14PM on 7/23. Use the first 180 minutes to complete the exam, and the remaining 45 minutes to scan and upload your work.
- **Submitting Exams:** Accurately label each problem with the number from the exam. Scan your work and save it as a .pdf. You will only be allowed to submit **one** .pdf file. You can use CombinePDF to combine files into one .pdf. Ensure that your files are easy to read.[7]
- If you fail to take an exam before the due date, you will receive a zero. Once you have started an exam, I will only accept work submitted through the Canvas quiz, during the allotted time. Therefore, you should allow yourself adequate time (45 minutes) to scan and submit your files.
- Do not discuss the exam with anyone, including your peers, until after the due date. **Any student suspected of violating this guideline will, at a minimum, receive a zero on the exam.**
- You may freely consult the textbook or any notes from our class meetings. However, **you are forbidden from consulting any other resources, including, but not limited to, other textbooks, the internet, Chegg, and math.stackexchange. Any student suspected of violating this guideline will, at a minimum, receive a zero on the exam.**

Extra Credit: The only way to earn extra credit is by earning more than 80 points (roughly 80 exercises) on Edfinity, see above.

Late Work Policy: I will not, under any circumstance, accept late submissions for reading assignments, daily assignments, or Edfinity exercises. Late submissions of weekly assignments and exams are only accepted, at my sole discretion, in extreme circumstances, such as in the case of a medical emergency. Extreme circumstances must be brought to my attention as soon as possible and must be adequately documented.

Letter Grades: Your final letter grade depends on your score. Final letter grades are assigned according to the following score ranges:

A+	96-100	B+	86-89	C+	76-79	D+	66-69	F	0-59
A	93-95	B	83-85	C	73-75	D	63-65		
A-	90-92	B-	80-82	C-	70-72	D-	60-62		

Score ranges may be adjusted (to your advantage) according to class performance. Scores falling in between two ranges will be rounded up. For example, according to the ranges above a final score of 75.1 will earn the letter grade C+ (rounded up), whereas a final score of 74.9 will earn the letter grade C (no rounding).

P/NP Grading: A passing grade (P) will be awarded if your score would earn a letter grade of C or higher. Otherwise, you will not receive a passing grade (NP). **Warning**: a score earning the letter grade of C- is NOT passing, contrary to popular belief.

Guidelines

Weekly Assignments (See also: Weekly Assignment Webpage)

[6] Updated 6/26: change of midterm dates
[7] Update 6/28: You will only be allowed to submit a single .pdf file.

- ▷ Collaboration is allowed and *encouraged*.
- ▷ You are **NOT** allowed to copy someone else's work.
- ▷ You are **NOT** allowed to let someone else copy your work.
- ▷ I expect your submissions to be well-written, neat, and organized. Do not turn in rough drafts or scratch work. What you turn in should be the "polished" version of potentially several drafts.
- ▷ Pay close attention to the presentation and clarity of your reasoning in your answers. The ability to communicate effectively is just as important as solving a problem correctly.
- ▷ You may freely consult the textbook or any notes from our class meetings. However, you are forbidden from consulting any other resources, including, but not limited to, other textbooks, the internet, Chegg, and math.stackexchange.

Communication

- ▷ Course announcements will be made primarily via Zulip and NOT canvas. (§Zulip Guidelines)
- ▷ If your question is math-related, please contact me or Xuguang on Zulip.
- ▷ If your question is of a sensitive or personal nature, please send me an email: jbreland@ucsc.edu. Include "MATH 22" in the subject line.
- ▷ Please make sure you give me as much information as you possibly can about the subject you intend to discuss when you contact me.
- ▷ **Never hesitate to reach out, I always want to hear from you.**

Zulip

- ▷ You will receive an invitation via email to join Zulip. Please sign up with your first and last name as your username.
- ▷ The Zulip forum is organized into streams. Here are a few examples:
  - ∗ **general:** General discussion about the course, or mathematics in general occurs here. You can ask questions, and any member of the class can respond.
  - ∗ **Edfinity exercises:** There will be a stream for Edfinity exercises. You could use this to ask questions about the problems you encounter.

  Posts in each stream can be organized by topic, e.g. "The cross product" or "How the heck do I compute this triple integral?".
- ▷ Zulip has basic in-line LaTeX built in, which makes it easy to typeset mathematical formulas. Whenever typing mathematical expressions, please use LaTeX by surrounding your code with the symbol "$$" on each side.
- ▷ Use Zulip to discuss anything and everything course related, especially: homework problems.
- ▷ The instructor and TA will read posts on Zulip periodically to answer some questions, but the goal is to promote collaboration with your peers. Try discussing your question with the rest of the class!
- ▷ Always be kind, courteous, and respectful.

I reserve the right to change any particular part of the syllabus above.

You will be promptly notified of any changes via Zulip and the course web page.

Other Important Information

Summer Session Calendar:
https://summer.ucsc.edu/studentlife/index.html

Mathematics Department's Enrollment Info:
https://www.math.ucsc.edu/courses/enrollment-info.html

DRC Remote Accommodations: UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me privately during my office hours or by appointment, preferably within the first two weeks of the quarter. At this time, I would also like us to discuss ways we can ensure your full participation in the course. I encourage all students who may benefit from learning more about DRC services to contact the DRC by phone at 831-459-2089 or by email at drc@ucsc.edu.

CAPS (Counseling and Psychological Services): This is a stressful time, so if you are in distress, managing heightened stress and anxiety, or want to get more support and a counselor's perspective on something you're going through, CAPS provides a variety of services for your needs, please visit their website for more information https://caps.ucsc.edu.

Academic Integrity: Academic integrity is the cornerstone of a university education. Academic dishonesty diminishes the university as an institution and all members of the university community. It tarnishes the value of a UCSC degree. All members of the UCSC community have an explicit responsibility to foster an environment of trust, honesty, fairness, respect, and responsibility. All members of the university community are expected to present as their original work only that which is truly their own. All members of the community are expected to report observed instances of cheating, plagiarism, and other forms of academic dishonesty in order to ensure that the integrity of scholarship is valued and preserved at UCSC. For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the Academic Integrity page at the Division of Undergraduate Education.

Title IX: The Title IX Office is committed to fostering a campus climate in which members of our community are protected from all forms of sex discrimination, including sexual harassment, sexual violence, and gender-based harassment and discrimination. Title IX is a neutral office committed to safety, fairness, trauma-informed practices, and due process. Title IX prohibits gender discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking. If you have experienced sexual harassment or sexual violence, you can receive confidential support and advocacy at the Campus Advocacy Resources & Education (CARE) Office by calling (831) 502-2273. In addition, Counseling & Psychological Services (CAPS) can provide confidential, counseling support, (831) 459-2628. You can also report gender discrimination directly to the University's Title IX Office, (831) 459-2462. Reports to law enforcement can be made to UCPD, (831) 459-2231 ext. 1. For emergencies call 911.