Math 22 Syllabus

Session 2 Summer 2023

Instructors Information

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Class Information

Location: Zoom link on the Canvas calendar

Time: MWF from 1 to 3:30 PM

Office Hours: TT from 1 to 2 pm.

Course Logistics

- We will be meeting via the Zoom link on the canvas calendar every Monday, Wednesday, and Friday at our designated time, which is from 1 to 3:30 PM. As summer lectures are typically longer, we will be taking a break of approximately 10 minutes in the middle of each class.
- I will be recording all my lectures and uploading them to the 'YuJa' section on Canvas. If you are unable to attend some classes, you can watch the recordings. However, I highly encourage everyone who can attend the lectures live to do so.

Goals/Outcomes

- The goal of this course is to cover the following topics: ***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.***
- By the end of this course, we expect students to have a solid understanding of concepts in Multivariable calculus. This knowledge will prepare them for future courses in pure and applied mathematics. The concepts covered in this course are essential in various mathematical fields such as Dynamical Systems, Geometry (Differential and Symplectic), Numerical Analysis, and Optimization Theory, among others. It's important to note that this list is not exhaustive, as the concepts covered in this course have broader applications beyond these mentioned fields.

Lecture tentative schedule

Monday	1. 3d space 2. The Dot Product 3. The Cross Product	1. Functions of Several Variables 2. Limits and Continuity	1. Maximum and Minimum Values 2. Lagrage Multipliers	1. Double Integrals	1. Triple Integral in Cylindrical Coordinates 2. Spherical Coodinates
Wednesday	1. Vector functions and space curves 2. Derivatives and integral	1. Partial Derivatives 2. Tangent Places and Linear Apporximations	1. Midterm	1. Double Integrals in Polar Coordinates 2. Applications	3. Change of Variables
Friday	1. Arc Length and Curvature 2. Velocity, and	2. The Chain Rules 3. Directional Derivatives and the	4. Review Integrals.	1. Surface Area 2. Triple Integral	1. Final Exam

	Acceleration	Gradient Vector			

Guidelines

- Emails will be answered from Monday through Friday from 8 am to 6 pm PST (For both instructor and TA). Please include your name and your pronouns.
- Any questions about the assignments should be addressed with TA.
- Please be respectful toward others.
- Most importantly, ask as many questions as you can. Hungarian-American Mathematician Paul Halmos said that "The only way to learn Mathematics is to do Mathematics".

Grading/Assignments

Homeworks (25 Points)

- The homework will be posted on Canvas under the "Assignments" and "Files" sections. Please upload a PDF of your work onto Gradescope.
- If you are unfamiliar with Gradescope, there is a guide available under the "Modules" tab in Canvas that you can refer to for instructions.
- Homework assignments are typically due by the end of each week. It is recommended to work on them throughout the week and avoid leaving them until the weekend.
- There will be one problem set issued per week, which should be turned in for the following week's assignment.
- There will be a total of 5 homework assignments, but only the 4 highest grades will be considered for your final grade. This means that it is acceptable to miss 1 of the assignments.
- Please note that no extensions will be given for the homework deadlines.
- While not all problems may be required to be turned in (specific instructions will be provided with each assignment), it is important to solve all of them. I will explain the reasoning behind this soon.

Participation (5 points)

- Your presence in class is not mandatory, but it is highly encouraged. 5 points will be granted to those who attend at least 80% of the classes.

Midterm (35 Points)

- The final exam will be a two-and-a-half-hours assessment around on 7th class.

- The exam will be taken during class hours. The exam will be taken during class hours. We will all have our cameras on during the exam, and the TA will be proctoring.
- After the exam, you will have 20 minutes to submit your solutions on grade scope.
- The material will be chapters 13 and 14 of the textbook.

Final (35 Points)

- The final exam will be a two-and-a-half-hours assessment on the last day of classes.
- The exam will be taken during class hours. The exam will be taken during class hours. We will all have our cameras on during the exam, and the TA will be proctoring.
- After the exam, you will have 20 minutes to submit your solutions on grade scope.
- The material will be chapter 15 of the textbook.

LATE WORK GRADING POLICY

- Since you are allowed to miss 1 out of the 5 assignments, no extensions will be granted. You have the option to skip up to 1 assignment (use this wisely).
- Your final homework grade will be calculated using the three assignments with the highest grades, along with the two highest grades (being counted twice). Essentially, the two lowest grades will be excluded, and the two highest grades will have double weightage in the calculation of your grade.

GRADE BREAKDOWN

These assignments add up to 100 points**.** There will be some extra points to be distributed on the assignments, but only 100 points will be necessary to get 100% on the final grade.

- *A ≥ 90*
- *B+ ≥ 85*
- *B ≥ 80*
- *C+ ≥ 75*
- *C ≥ 60*
- *D ≥ 50*
- *F < 50*

Course Materials/
Required Materials

- We will be following: Calculus by James Stewart, 8th Edition, ISBN-13: 978-1285740621, or Multivariable Calculus by James Stewart, 9th Edition
- If you handwrite your homework, it is your responsibility to make sure it is legible and neat. If we cannot read what you wrote, you will earn a zero for that part.
- I highly recommend taking this time to learn LaTex and typing up your homework. With this in mind, I will post some source code each week related to that week's assignments.
- If you have never written any math in LaTex before, I suggest creating a free account at overleaf.com

Academic Integrity

Academic integrity means honesty in academic work. All of your coursework should be a result of your own efforts. You may feel pressured and overwhelmed by the demands of school, work, and personal commitments. But you are expected to approach your work with honesty and integrity. Please read the Academic Integrity page from the Office of the Registrar for more information.

You should

- Trust your own intellect.
- Demonstrate your own achievement and abilities.
- Do original work for each course.
- Undertake research honestly and credit others for their work.
- Ask for help from your instructor.

You should not

- Copy ideas or wording without citing your source.
- Copy answers from another student.
- Ask someone else to do your work for you.
- Complete an assignment for another student.

ACCESSIBILITY:

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 email, as soon as possible so I can assure you have the support you deserve/are entitled to. We can 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. Operations continue via remote appointments. If you have questions or concerns about exam accommodations or any other disability-related matter, email the DRC Schedulers at drc@ucsc.edu for an appointment.

RELIGIOUS ACCOMMODATION:

UC Santa Cruz welcomes diversity of religious beliefs and practices, recognizing the contributions differing experiences and viewpoints can bring to the community. There may be times when an academic requirement conflicts with religious observances and practices. If that happens, students may request the reasonable accommodation for religious practices. The instructor will review the situation in an effort to provide a reasonable accommodation without penalty. You should discuss the conflict and your requested accommodation with your instructor early in the term.

TITLE IX/CARE ADVISORY:

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.

Support/Help Options (with hyperlinks):

Tutoring and Learning Support

Sexual Violence Prevention & Response (SAFE) website Hate/Bias Report Form

Counseling and Psychological Services

On-Campus Emergency Contacts