Math 22, Summer Session 1, 2019

Introduction to Calculus of Several Variables

Mon Wed Fri, 9:00am - 11:30pm, Classroom Soc Sci 2 075

Andres Perico

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Office Hours: Mon and Fri, 11:30 - 12:45 at Soc Sci 2 075

I might make slight updates to the syllabus during the course. Please check canvas and your email for any updates.

Course Description: 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. Students cannot receive credit for this course and course 23A.

Credits: 5 units

Prerequisite(s): One of the following: MATH 11B or MATH 19B or MATH 20B or AMS 15B or AP calculus BC exam score of 4 or 5. Prerequisites waived for non-UCSC students.

Text: *Multivariable Calculus. 7th Ed.*
Author: James Stewart

Important dates:
Drop: Monday, July 1
Request for "W": Friday, July 12

Neither Summer Session nor instructors drop students for non-attendance or non-payment. Students must drop themselves. Dropping results in full tuition reversal/refund. Withdraw posts a W for the grade and full tuition is charged (no refund).
For all dates and deadlines, including 'change of grade option' (P/NP) and grades due, here is the summer academic calendar - https://summer.ucsc.edu/studentlife/index.html

Grade Distribution:

Quizzes (x3)	15%
Homework (x5)	15%
Midterm Exam	30%
Final Exam	40%

Homework: Will be posted/submitted in Canvas every week (due every Friday).

Quizzes: Weekly in discussion sections except the weeks of Midterm and Final.

Midterm Exam: There will be a single mid-term exam on Friday July 12.

Final: A cumulative final exam will be held on the last day of class, Friday July 26.

Section:
Thursdays 11:00 am or 12:15 pm
Room: PhysSciences 136
TA: Yufei Shan
Email: yshan7(at)ucsc(dot)edu
Office: McHenry 4117
Office Hours: Tu-Thu 3:00pm to 4:00pm (McHenry 4112/4117)

LSS:
Tutor: Noa Mills
Hours: TBA
Where: ARC
Email: nkmills(at)ucsc(dot)edu

DRC Accommodations:
The Disability Resources Center reduces barriers to inclusion and full participation for students with disabilities by providing support to individually determine reasonable academic accommodations. If you have questions or concerns about exam accommodations, or any other disability-related matter, please contact the DRC office, located in Hahn 125 or at 831-459-2089 or drc@ucsc.edu.

Tutoring:
If you would like to hire a tutor for this class and you're not sure how to find one, you are welcome to ask me for recommendations and I will put you in contact with good tutors I know.

Late Policy: I do not accept late homework in any circumstances.

Make up Quizzes/Exam: "Make-up" quizzes/exams must be approved and arranged in advance. Absences from exams due to illness or personal crisis must be adequately documented.

Academic Dishonesty
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. In the event a student is found in violation of the UCSC Academic Integrity policy, he or she may face both academic sanctions imposed by the instructor of record and disciplinary sanctions imposed either by the provost of his or her college or the Academic Tribunal convened to hear the case. Violations of the Academic Integrity policy can result in dismissal from

the university and a permanent notation on a student's transcript. 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 university cherishes the free and open exchange of ideas and enlargement of knowledge. To maintain this freedom and openness requires objectivity, mutual trust, and confidence; it requires the absence of coercion, intimidation, or exploitation. The principal responsibility for maintaining these conditions must rest upon those members of the university community who exercise most authority and leadership: faculty, managers, and supervisors. The university has therefore instituted a number of measures designed to protect its community from sex discrimination, sexual harassment, sexual violence, and other related prohibited conduct. Information about the Title IX Office, the online reporting link, applicable campus resources, reporting responsibilities, the UC Policy on Sexual Violence and Sexual Harassment and the UC Santa Cruz Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment can be found at titleix.ucsc.edu. The Title IX/Sexual Harassment Office is located at 105 Kerr Hall. In addition to the online reporting option, you can contact the Title IX Office by calling 831-459-2462.

Tentative Course Outline:
The topic coverage might change as it depends on the progress of the class. If you are using other textbook, let me know I'll give you the correspondent sections.

Course Outline:
6/24: Space Geometry. Vectors. Dot Product 12.1 - 12.3
6/26: Cross Product. Equations of lines and planes. Cylinders and quadric surfaces.12.4 - 12.6
6/28: Vector Functions. Derivatives and Integrals of Vector Functions. 13.1 - 13.2
7/1: Functions of several variables. Limits and continuity. Partial Derivatives 14.1 - 14.3
7/3: Tangent Planes and Linear Approximations. The Chain Rule 14.4 - 14.5
7/5: Directional Derivatives and Gradient Vector. 14.6
7/8: Maximum and Minimum Values. 14.7
7/10: Lagrange Multipliers. 14.8
7/12: Midterm (covers until Lecture 7)
7/15: Double integrals over rectangles. Iterated integrals. 15.1 - 15.2
7/17: Double Integrals over General Regions. Polar Coordinates. 15.3 - 15.4
7/19: Applications of Double Integrals. Surface Area. 15.5 - 15.6
7/22: Triple Integrals. Triple Integrals in Cylindrical Coordinates. 15.7 - 15.8
7/24: Triple Integrals in Spherical Coordinates. Change of Variables. 15.9 -15.10
7/26: Final Exam

Some tips for the course:

- Read the sections to be covered in lecture before you come to lecture.
- If you are stuck in some problem, work through the examples in the text first.
- Form a study group and meet regularly.
- Keep up with the schedule.
- Attend all lectures and discussion sections where you can get your questions answered.
- If something is unclear attend office hours.
- Use LSS for additional help.

Grading Scale The grading scale for the class will be **approximately**:
A+:97%-100%,
A :93%-96%,
A-:90%-92%,

B+:87%-89%,
B :83%-86%,
B-:80%-82%,
C+:76%-79%,
C :70%-75%,
D :60%-69%,
F :0%-59%.

Letter grade boundaries may be lowered at my discretion in order to eliminate some borderline cases.