

MATH 228: Calculus III

Course Syllabus - Spring 2018

Lectures: Every **TuTh 9:35-10:50am** in BUS 130

Instructor: Yitwah Cheung
Office: Thornton Hall, Room 950
Phone: (415) 338-1805
Office Hours: TuTh 1:30-2:30 and by appt.
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Activity: Every **MW 10:10-11am** in TH 404

Instructor: Deborah Damon
Office: Science 170B
Office Hours: TBD
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Prerequisites: MATH 227 with a grade C or better.

Bulletin Description: Three-dimensional analytic geometry, partial differentiation, multiple integrals, vector calculus. Classwork, 3 units; laboratory, 1 unit.

Course Objectives: The main objective of Calculus III is for students to learn the basics of the calculus of functions of two and three variables. They will study vectors and Euclidean geometry in three-dimensional space, vector valued functions, partial derivatives, the gradient vector, Lagrange multipliers, double and triple integrals and line integrals, culminating with Green's Theorem, Stokes' Theorem, and the Gauss Divergence Theorem. They will also apply these ideas to a wide range of problems that include motion in space, optimization, arc length, surface area, volumes, and mass. The students should be able to interpret the concepts of Calculus algebraically, graphically and verbally. More generally, the students will improve their ability to think critically, to analyze a problem and solve it using a wide array of tools. These skills will be invaluable to them in whatever path they choose to follow, be it as a mathematics major or in pursuit of a career in one of the other sciences. Students will be required to attend a two-hour laboratory every week.

Upon successful completion of the course, students should be able to:

- Find vector and scalar equations of lines and planes in three-dimensional space and apply vector methods to compute distances, angles, areas, and volumes.

- Find and interpret partial derivatives, directional derivatives and gradients for functions of several variables.
- Correctly apply the chain rule for transformations.
- Solve unconstrained and constrained optimization problems.
- Set up and evaluate multiple integrals in rectangular, cylindrical, and spherical coordinates to find volume, mass, and surface area.
- Apply derivatives and integrals to problems of motion and arc length.
- Set up and evaluate line integrals, and construct potential functions for conservative vector fields.
- Set up surface integrals and apply the theorems of Green, Stokes and Gauss.

Textbook: *Calculus Early Transcendentals, 2nd ed.* by Briggs-Cochran-Gillett ISBN: 978-0-321-94734-5

Homework and Reading Assignments: Check the course webpage at

<http://online.sfsu.edu/~ycheung/228/>

for daily homework and reading assignments and other useful information. Students are expected to complete all homework and reading assignments in a timely fashion. LATE HOMEWORK WILL NOT BE ACCEPTED.

Exams: There will be 3 midterms and a final exam. The midterms are 50 minutes long and will take place in the same room as the Activity session. The final is 2.5 hours and will take place in the same room as the lectures on

Tuesday, May 22

between 8-10:30am.

Activity: This course includes a 2-hour mandatory activity session. Participation in the activity session constitutes roughly 10% of your course grade, as determined by the instructor for the activity component.

Your Grade: There will be at least 10 Homework Sets, each worth 5 points. In addition, there are 3 midterms and a final exam, each worth 50 points. The sum of your final, midterm and homework scores together with participation points in the activity session will be used to determine your grade, based on the following scale. In the event that a curve is used, it will only improve your standing.

Score	0-59	60-62	63-66	67-69	70-72	73-76	77-79	80-82	83-86	87-89	90-92	93-100
Grade	F	D–	D	D+	C–	C	C+	B–	B	B+	A–	A

Academic Integrity: All students are expected to adhere to the SFSU honor code. Any student caught cheating on an examination will automatically fail the course and face expulsion from the University. Each Problem Set is to be written up individually. However, students may and are in fact encouraged to discuss the homework problems with each other.

Enrollment Status: You are solely responsible for maintaining your own enrollment status. Check the “Withdrawl Policy” on the course webpage for the proper procedures for maintaining your enrollment status.

DPRC: Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/415-338-2472, video phone/415-335-7210) or by email (dprc@sfsu.edu).

Violence: SF State fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as an SF State student, the course instructor is required to notify the Title IX Coordinator by completing the report form available from <http://titleix.sfsu.edu>, emailing vpasem@sfsu.edu or calling 338-2032. To disclose any such violence confidentially, contact: The SAFE Place - (415) 338-2208; http://www.sfsu.edu/~safe_plc/ Counseling and Psychological Services Center - (415) 338-2208; <http://psyservs.sfsu.edu/> For more information on your rights and available resources: <http://titleix.sfsu.edu>

Religious Holidays: Reasonable accommodations will be made for you to observe religious holidays when such observances require you to be absent from class activities. It is your responsibility to inform the instructor during the first two weeks of class, in writing, about such holidays.