MATH 228: Calculus III
Course Syllabus - Spring 2016

Lectures: Every TuTh 12:35-1:50pm in HSS 302

   Instructor:    Yitwah Cheung
   Office:       Thornton Hall, Room 950
   Phone:        (415) 338-1805
   Office Hours: Tu 11:30-12:30, Th 10:30-11:30 and by appt.
   Email:        ycheung@sfsu.edu

Lab: Every MW 3:10-4pm in TH 404

   Instructor:    Michael Maxwell
   Office:       TBD
   Office Hours: TBD
   Email:        mmaxwell@sfsu.edu

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.


Homework and Reading Assignments: Check the course webpage at

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

for daily homework and reading assignments. Handouts and other useful information such as homework due dates can also be found there. Students are expected to complete all homework and reading assignments in a timely fashion. LATE HOMEWORK WILL NOT BE ACCEPTED.

Exams: 2 midterms and a final exam will take place at the times and locations:

Midterm 1: Wednesday, March 16 from 3:10-4pm in TH 404
Midterm 2: Wednesday, April 27 from 3:10-4pm in TH 404
Final: In HSS 302 from 10:45am-1:15pm on

    Thursday, May 19.

Lab: This course includes a mandatory 2-hour laboratory in which students have the opportunity to ask questions as well as give oral presentation on the homework. Participation will be evaluated based on effort and constitutes roughly 10% of your course grade.
Your Grade: There will be at least 10 Homework Sets, each worth 10 points. In addition, there are 2 midterms, each worth 100 points, and a final exam, worth 200 points. Your raw score out of 550 is the sum of the combined scores on your Homework Sets (100 points) plus the sum of your midterm scores (200 points) and your score on the final (200 points) plus lab participation (50 points). Points may be deducted for unexcused absences. Your grade for the course will be based on your normalized score, which is your raw score divided by 5.5, following the scale below. A curve, if used, will only be to your advantage.

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<th>Total score</th>
<th>0-59</th>
<th>60-62</th>
<th>63-66</th>
<th>67-69</th>
<th>70-72</th>
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<td>D−</td>
<td>D</td>
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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/TTY 415-338-2472) 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 Dean of Students. 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.