

- Time and Meeting Place: Tu Th, 9:35 - 10:50 AM, Fletcher Hall, 112
- Instructor: Professor Jim Hoste, B205, x73258, jhoste@pitzer.edu
- Office Hours: M 1:45-2:45; W 3-4; Th 3-4; and by appointment
- Texts: Calculus III, by Jerrold Marsden and Alan Weinstein; Student's Guide to Calculus, Vol III, by Frederick Soon. Available free at <http://www.cds.caltech.edu/~marsden/volume/Calculus/>
- Class Web site: <http://pzacad.pitzer.edu/~jhoste/HosteWebPages/Courses/Math32/main.html>
- Tutoring: Pitzer offers mathematics tutoring several nights per week. Hours will be announced as soon as possible.

**Prerequisites:** Completion of Math 31, a suitable score on the mathematics placement exam, or permission of the instructor.

**Course Description:** This course will cover chapters 13–18 of the text. The primary topics are multiple integration, partial differentiation, and the theorems of Green and Stokes.

**Homework:** Homework will be assigned regularly and there will be one assignment due at every class meeting. Homework assignments will be posted on the class website. Each student is responsible for knowing what the current homework assignment is and for turning it in on time. **NO LATE HOMEWORK WILL BE ACCEPTED** (except in the case of excused absences such as for illness, family emergencies, etc.) Turn the homework in on the day it is due, either by bringing it to class, **OR** by placing it in the correct envelope in the bin outside Professor Hoste's door. Satisfactory completion of the homework assignments will constitute 20% of the course grade. This is a lot! **DO** the homework!!

### **Exams and Grading:**

We will have 15-minute quiz every Thursday at the end of the class period. The best ten quiz scores will be combined for 50% of the course grade. The final exam will count for the remaining 30% of the course grade. It will be held at the regularly scheduled time of Wednesday, May 10, 2-5 pm. There will be no midterm exams. **THERE WILL BE NO MAKE-UP QUIZZES.** Note that we should have 14 quizzes and are only going to count the top ten, so up to four can be missed.

A total weighted score (with weights given as above) of 90% or better will result in a course grade of A; 80-90%, B; 65-80%, C; 50-65%, D; and 0-50% F. It *may* be the case, depending on how the class does, that the same letter grades *might* be assigned at slightly lower cutoff's. Finally, students should note that they will be graded on their total weighted score and cannot be given *extra credit* for additional assignments, dramatic improvement, or other activities.

**Calculators:** Calculators can be useful, especially for computing Riemann sums, so it is a good idea to have one. A program such as Mathematica can be quite useful for graphing surfaces and level sets of functions. However, computers and calculators will not be allowed on quizzes or the final exam.

**Student Learning Outcomes:** Students who successfully complete this course will be able to:

- Describe lines and curves in  $\mathbb{R}^3$  parametrically.
- Describe the graphs of surfaces in  $\mathbb{R}^3$ , including quadric surfaces.
- Compute dot and cross products of vectors and use this to solve geometric problems in  $\mathbb{R}^3$ .
- Compute partial derivatives, including use of the chain rule.
- Compute the gradient of a function and understand its relation to level sets.
- Find extrema of functions, including using the method of Lagrange multipliers.
- Set up and compute multiple integrals with applications to volume, center of mass, etc.
- Work in polar, cylindrical, spherical as well as Cartesian coordinate systems.
- Compute path and surface integrals.
- Compute and understand the significance of the the curl and divergence of a vector field.
- Understand the theorems of Green, Stokes, and Gauss and use them to compute integrals.

**Remarks:** This is a difficult course for at least three reasons. First, there is simply no substitute for proper preparation. Students who are inadequately prepared face a serious challenge that simply may be too great to overcome, however hard they try. The good news is that by returning to the correct place in the calculus sequence, such students may then succeed wonderfully and eventually be ready for Calculus III. The bad news is that we cannot undertake more than a very quick review of previous material in this course. The second reason that this class is difficult is that we must cover a fairly large amount of material. We cannot slow down too much or we will not reach the end before the semester is over. We will spend roughly 2 weeks each on Chapters 13 through 17 so as to leave 3 weeks for Chapter 18. The third reason this class is hard, is that most students seem to have trouble visualizing surfaces in three dimensions. We will work on this and gain experience as we go.

It is extremely important that students work on calculus *every* day! About 10 hours of work per week, outside of the class meeting time, will probably be necessary to succeed in this class. Students need to read the text, come to class prepared to ask questions, and come to office hours to ask questions if they are having trouble with the material. Student are urged to form study groups and work together to help one another and to attend the tutoring sessions.

It is imperative that students requesting academic accommodations identify themselves early in the semester. To request academic accommodations due to a disability, please contact Associate Dean of Students and Case Manager Danny Hernandez if you are a Pitzer student. He can be contacted via email at [Danny.Hernandez@pitzer.edu](mailto:Danny.Hernandez@pitzer.edu) or at (909) 607-2429. If you attend another one of the Claremont Colleges, please contact your home colleges disability officer. These are:

- CMC: Julia Easley: [julia.easley@claremontmckenna.edu](mailto:julia.easley@claremontmckenna.edu) (909) 621-7377

- HMC: Deborah Khan: [dkhan@g.hmc.edu](mailto:dkhan@g.hmc.edu) (909) 607-7916
- Pomona: Jan Collins-Eaglin: [jan.collins-eaglin@pomona.edu](mailto:jan.collins-eaglin@pomona.edu) (909) 621-8017
- Scripps: Leslie P. Schnyder: [LSchnyde@scrippscollege.edu](mailto:LSchnyde@scrippscollege.edu) (909) 621-8277
- CGU: Chris Bass: [chris.bass@cgu.edu](mailto:chris.bass@cgu.edu) (909) 607-6999