

Math 230H, Calculus and Vector Analysis Fall 2001

Course Description	Three-dimensional analytic geometry; vectors in space; partial differentiation; double and triple integrals; integral vector calculus.
Prerequisites	Math 141 is a prerequisite for this class.
General Information	This is an honors section of Math 230. It will be a little more challenging than a regular section. Information that you might read elsewhere about exams, tests, and so on, in other sections of Math 230, will probably not apply to this section. Read on to learn how your course will operate
Class Meeting Times	The class meets four times a week, on Mondays, Wednesdays, Thursdays, and Fridays from 2.30 to 3.20 p.m. On <i>Mondays, Wednesdays, and Fridays</i> we meet in 109 Boucke Building; on <i>Thursdays</i> , in 169 Willard Building.
Instructor	John Roe 427 McAllister Building 865-3845 roe@math.psu.edu
Office Hours	Wednesday 3.30 – 4.15 (right after class, as soon as I get back to my office) and Friday 10.15 – 11.00 <i>Students are strongly encouraged to make use of the available office hours to discuss any questions or problems that they may have about the course or about mathematics more generally.</i>

Text Thomas and Finney, *Calculus*, 9th Edition, Addison–Wesley Publishing Company. We will be studying material from chapters 9 through 14.

You may find the following books useful for supplemental reading, but they are not required: John Roe, *Elementary Geometry*, Oxford University Press; Colin Adams, Abigail Thompson, and Joel Hass, *How to Ace the Rest of Calculus*, W H Freeman and Company.

Calculators Calculators will not be necessary for the course, and are not permitted on the tests or on the final exam.

Homework There will be nine homework assignments, due in class on the following Thursdays: 8/30, 9/6, 9/20, 9/27, 10/11, 10/18, 11/1, 11/8, 11/29. You will be provided with your homework assignments at least a week in advance. Each assignment will consist of 5 questions, each worth 5 points, for a total of 25 points per assignment. Homework will be returned the Monday after it is due. Late homework will be accepted in class on the Friday after it is due; a 20% penalty will apply. The lowest homework score will be dropped when calculating your final grade.

It is very important that you present solutions to the homework problems which are clear and well-organized. Poorly presented solutions will adversely affect your score! Don't show your scratch calculations: once you have figured out what the solution to a problem is, start from the beginning and write up a clear account of what you did to arrive at the solution. Someone reading your answer should be able to easily retrace the steps of your calculation or argument.

Tests There will be four in-class tests, taken on the following Thursdays: 9/13, 10/4, 10/25, 11/15. Each test will consist of 4 problems, each worth 10 points, for a total of 40 points per test. Make-up tests will be scheduled only for students with a University-approved excuse.

- Honors Project** Each student must participate in work on an honors project, which should be a connected and coherent exposition of an application of the course material to a mathematical, scientific, or technical problem. A list of possible honors projects will be provided, but students are free to select their own. You may work on your projects individually, or, with the consent of the instructor, in a group of no more than 3 members. Projects are expected to be about 7–15 pages in length and are due on the last day of classes. Projects will be graded out of 70 points.
- Exams** A comprehensive final exam will be scheduled during the week of Monday December 10th – Friday December 14th. *Students should not make arrangements to leave University Park before the end of this period.* The final exam will be graded out of 70 points. There will be no midterm exams other than the in-class tests mentioned above.
- Group work versus individual work** You can often learn a great deal by discussing problems together; this is the way that professional mathematicians work. However, it is essential to the learning experience, and only fair to everyone, that each student contribute his or her own effort to each assignment. As a bare minimum, once a solution has been determined, each student should write up his or her own answer completely independently of everyone else, and any significant help should be acknowledged. Misrepresenting the work of others as your own (plagiarism) is a form of academic dishonesty and may result in failing the course. See the section ‘Academic Integrity’ at the end of this syllabus. For complete information about the University’s academic integrity policy, consult the Policies and Rules section of the Student Guide to the University.

Practice Problems

During (almost) every class you will be assigned practice problems, which you should solve — or try to solve — before the next class meeting. Each class will begin with a discussion of the previous day’s practice problems. It is extremely important that you work on these problems. Proficiency in calculus will come only through such an effort.

In order to encourage you to do the practice problems (which will not otherwise be graded in any way) each test will include one or more problems taken more or less directly from the practice lists. Past experience shows that those who devote proper time to the practice problems, and solve all of them carefully, do very well on the tests and very well in the course as a whole. Those who do not bother looking at the practice problems tend to do poorly.

Grading

As mentioned above, each homework will be graded out of 25 points, each test out of 40, and the final exam and project out of 70 each, for a total (eight homeworks, four tests, the final, and the project) of 500 points. How will this translate into grades? I will *try* to follow the following scheme:

Point Range	Grade Range
426–500	<i>A–, A</i>
376–425	<i>B–, B, B+</i>
326–375	<i>C, C+</i>
276–325	<i>D</i>
0–275	<i>F</i>

I say ‘try’ because my aim will be to make grades in 230H correspond to grades in the regular sections of 230. In other words, despite the fact that this course will be a little more challenging, if you are capable of getting, for example, an A in a regular section of 230 you should be capable of getting an A here. If this means that the above scheme will have to be changed I will let you know well before the end of the semester, so that you will have a clear picture of how you are doing in the course.

Home Page There is a course home page at <http://www.math.psu.edu/roe/230H/home.html>. The home page contains copies of the syllabus and course diary, the homework and practice problem assignments, useful links, and a form for contributing feedback on the course to the instructor.

Academic Integrity All Penn State policies regarding ethics and honorable behavior apply to this course. Academic integrity is the pursuit of scholarly activity free from fraud and deception and is an educational objective of this institution. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. For any material or ideas obtained from other sources, such as the text or things you see on the web, in the library, etc., a source reference must be given. Direct quotes from any source must be identified as such. All exam answers must be your own, and you must not provide any assistance to other students during exams. Any instances of academic dishonesty will be pursued under the University and Eberly College of Science regulations concerning academic integrity.