

CALCULUS AND ANALYTIC GEOMETRY, FALL 1998

MATHEMATICS 140.003 AND 140.004

Instructor: Victor Brunsten

Office: Eiche 101G

Office Hours: Monday 9-10 and 11-12, Wednesday and Friday 9-10 or by arrangement with me

E-mail: vwb2@psu.edu or brunsten@math.psu.edu

Phone: 949 5695

Homepage: <http://math.aa.psu.edu/~victor/classes/140.html>

- but look for the new and improved math department homepage together with faculty homepages and their course listings - **coming soon!**

Text:

Calculator: Not necessary, but if you must buy one, get a TI-82. These won't be needed, but can be used in quizzes and exams.

Content: Functions, graphs, tangents, limits, asymptotes and continuity. The second part of the course contains derivatives, rates of change, differentiation formulae (such as the chain, product and quotient rules), implicit differentiation and related rates together with higher derivatives and applications like Newton's method and differentials. Extensions to the transcendental functions such as the exponential and logarithmic functions together with the inverse function theorem and its applications. Further applications include the Mean Value Theorem, tests for critical numbers and Fermat's theorem, monotone functions and concavity with applications to maximum and minimum problems and economics. The final part of the course is concerned with the theory of integration. This involves sigma notation, area and its computation using rectangles, the definite integral, the Fundamental Theorem of Calculus and the Substitution Rule. Applications to the computation of areas between curves and of volumes of rotations (if there's time).

Assessment & Grades: The assesment is made up of weekly quizzes and on-line assignments via **WeBWorK**, 3 midterms and a **cumulative** final. There will be daily assignments from the text though they will not be collected. However, the quizzes will bear a striking resemblance to the homework questions, so it would pay to do as many of the questions as possible. The exams will also take their questions from the quizzes and the homework, though there may be questions on those that you haven't

seen before.

Exam 1
Exam 2
Exam 3
Final Exam

Regrades for these exams have the following procedure. After the exams are handed back, (usually the following week), you have 24 hours to redo the questions that you lost points on. Submit the reworked questions on a separate sheet of paper, together with the original exam and a correct reworking of the problem will receive 50% of the remaining grade. For example, an initial grade of 6 out of 10 on a question can be improved to 8 out of 10 via a regrade. There is a maximum of 600 points obtainable in the course. This breaks down into 100 (maximum) for the quizzes, 100 for each of the exams and 200 for the final. Getting 90% of them guarantee an A⁻, 80% of them guarantee a B⁻, 70% a C⁻ and 65% a D. Below 65% and you fail. This is not negotiable. I **may** curve you up (**never** down) if I think it's warranted.

Attendance: I really, really, really strongly urge you to come to class. The material **can't** be absorbed just by reading the book. If you have to miss class, LET ME KNOW. As soon as possible, preferably before an absence. If you run into trouble and I can't associate your face to your name, I'm not likely to go out of my way to help you. On the other hand if I have a good idea of who you are, I'm more likely to cut you some slack. This said, I must admit that I don't have an attendance policy and that it's up to you. Just remember, it's your choice.

Other: I'm around to help you, so make use of me. Come see me. If you have questions, come see me about them. Got problems? See me. Any questions that can't be answered in class? See me. Remember, college is *not* like high school. The pace in college is *much* faster than in high school. This implies several things for you:

You must read ahead of the lectures. The lectures are to draw your attention to parts of the theory that may not be immediately obvious on first reading and to synthesise the material.

You are responsible for understanding the material. There is not enough class time and too much material to be covered for it to be any other way.

The homework is important. The homework is the way for you to test your understanding of the material and is one of the few ways that your work can be judged outside of the exams.

You can't hope to catch up later! Learning mathematics can only be done if you work at it steadily. You can't hope to pass this course if you don't come to classes, or do the homework, then try to cram before the exams. It may have worked in high school (though I doubt it), but it won't work in college.