Mathematics 243

Advanced Calculus I

Fall, 2007

Instructor: Bill Abikoff

Text: Fitzpatrick, Advanced Calculus, Second Edition

Meeting times: 12 to 12:50 M in MSB 315 and 12:30 to 1:45 TuTh in MSB 415.

The course is the first in a theory-oriented sequence giving an introduction to calculus (from an advanced point of view), differential equations and linear algebra. The sequence provides a sound foundation for further study in mathematics, statistics and theoretical science and engineering. The course will have projects which complement the class material.

I expect that the participants in this course have studied the basic calculational skills of AB calculus --- roughly corresponding to a 4 or 5 on the AB calculus AP test or a 3 on the BC exam. The course is directed at students who have demonstrated an aptitude for mathematics and are willing to work hard to further both their skills and a deeper understanding of rigorous, conceptual thinking. The sequence provides an organized introduction to the ideas of the subjects and reasoning with their ideas and concepts. You'll work hard but I'm there to back you up.

Since the course is being given for the first time, I think it might be useful to make available some further information about the course. Additional description is available in the Honors Program listing for the course (click here); a more informal description is given when you click here.

You might also find it interesting to compare this course with the MIT undergraduate courses on calculus from a theoretical viewpoint. Look at the OpenCourseWare project at MIT:

http://ocw.mit.edu/OcwWeb/Mathematics/index.htm

Their course number is 18.014. They chose to use a forty year old, but classic, text. The one we use is very recent; however, courses at this level rarely follow

the text closely.

I often follow the questions asked by the class rather than my own notes --- so you should try to take good notes and I encourage you to share them.

My e-mail address is abikoff@math.uconn.edu . Clicking on the address should give you a pop-up mailer window. My homepage is http://www.math.uconn.edu/~abikoff.
I will always be available, as often and as soon as needed, by appointment. e-mail is the most reliable means of contacting me.

Lists of homework assignments, projects and other information for students are given as given as hypertext links below. The lists are works in progress and may change as the semester progresses.

Homework

Here's a tentative version of the Course Outline.

The pdf versions of my lecture notes, for last year, start with Lecture 1. They may be changed; if so, I'll announce it in class.

If there's a star on the left hand side of a line, it means you should take it as an exercise.

First, here's the link to Lecture 1.
And to **Lecture 2.**
And to Lecture 3.
And to Lecture 4.
And to Lecture 5.
And to Lecture 6.

and then the rest.

The binomial theorem.

Projects are available here.

New and important is a place where I'll put items as needed.