This is a proof-based course on Calculus (also called Analysis). It assumes prior familiarity with proofs, single-variable Calculus and multivariable Calculus, but presents all the material from scratch in order to establish everything rigorously.

The basic prerequisite for this course is to have the curiosity to find out why things work as they work. Proofs are the deepest and most enjoyable part of mathematics: they combine absolute rigor with wild imagination. You need to feel an enthusiasm for new ideas, but not let yourselves get carried away to non-rigorous argumentation. Of course, the ability to combine ideas with rigor is something that you will work on during this course (and the course of all your engagement with Mathematics from now on).

An important feature of proofs is that you can rarely cope with advanced proofs if you are not proficient with background proofs. Therefore, do not leave gaps – if something appears difficult, spend the necessary time on it and you will be rewarded by saving a multiple of that time in the future. Proofs are about understanding, and rarely about memorizing or tricks. If you can reconstruct a proof then you have understood the material; if not, then you must work more to understand it.

As the semester moves on, and you start seeing familiar notions from Calculus, you will feel rewarded for finally being able to see through what you were previously asked to take for granted. Indeed, everything will feel easier, and memorization unnecessary, the deeper that your understanding will be.

Lectures: Mondays and Wednesdays 10:00-11:20pm, @ Hill Hall 202.

Instructor: Yiannis Sakellaridis, sakellar@rutgers.edu

Office hours: Mondays 1:30-2:30pm, or by appointment, @ Smith 323.

Textbook: Apostol, Mathematical Analysis (2nd ed.). We will mainly cover Chapters 1, 3, 4, 5 and 7 of the book during this semester, without the sections on complex numbers.

Website: http://math.newark.rutgers.edu/~sakellar/advancedcalculus/

Grades (updated!): The final grade will be computed as follows:

- 40% Final exam.
- 30% 15% each of two midterms. (Total: 110%.)
- 10% 5% each of two quizzes.
- 30% Homework.

*In order to pass the course, you must have a total of at least 50% and a final exam grade of at least 35%.*
Remarks:

• The best way to achieve good grades is to forget about grades and focus on understanding the material!

• There will be no make-ups for missed midterms or quizzes: for students who miss them due to documented – i.e., they must bring a doctor’s notice – medical (or other serious) reasons the weight of the midterm or quiz will automatically be transferred to the final exam. **Pay a lot of attention to the calendar below, and try to resolve any conflicts as soon as possible.** There will be a make-up exam in case someone misses the scheduled final exam for a documented medical (or other serious) reason, but notice that if I err with the level of difficulty of the make-up exam, it will probably be towards the difficult side.

**Important dates:**

- Wednesday 18 January: Classes start.
- Tuesday 24 January: Deadline for dropping the course without “W” Grade.
- Wednesday 25 January: Deadline for adding the course.
- Wednesday 29 February: Midterm 1.
- March 10–18: Spring Break.
- Tuesday 27 March: Deadline for dropping the course with a “W” Grade.
- Monday 16 April: Midterm 2.
- Monday 30 April: Last day of classes.
- Tuesday 1 – Wednesday 2 May: Reading period.
- Monday 7 May, 8:30–11:30 am: Final Exam.

**Disability Center and further support:**

Under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, the University has an obligation to make all programs sponsored by Rutgers accessible to those with disabilities. To ensure equal access, Rutgers must provide reasonable and appropriate modifications of its programs or courses unless to do so would fundamentally alter the nature of the program or course.

If you have some disability, or even some recurring problem which may hinder your participation in class or at exams, please contact the University Office of Disability Services to request accommodations for your condition. Feel free to contact your instructor if you have any concerns about your condition and how it could affect your participation. Visit also the website: [http://disabilityservices.rutgers.edu/](http://disabilityservices.rutgers.edu/) for further information on university resources that you can use to help you with disabilities, learning difficulties, reading or writing difficulties, psychological issues and other problems. These resources include the Learning Center, the Writing Center, the Psychological and Counseling Services and the Louis Stokes Alliance for Minority Participation (LSAMP).

*Last updated February 2, 2012.*