# Kursrapport MM5021 Mathematics III - Foundations of Analysis HT24

Antal respondenter: 1
Antal svar: 1
Svarsfrekvens: 100,00 %

## . Beskrivning av kursupplägget.

**Beskrivning av kursupplägget.**

The course covers basic theorems of differential calculus. Here are the main topics of the course, roughly in the order that they were presented in class:

-Properties of real numbers, with emphasis on the Least Upper Bound Property.

-Metric spaces, and continuous functions between them. We introduced the concepts of connectedness and compactness, and used them to prove the Intermediate Value Theorem and the Heine-Borel theorem.

-Differentiation of functions of one variable. This repeats some familiar material, from a more rigorous perspective. We proved the Mean Value Theorem, and saw that it is a powerful aid for proving many results about differentiable functions.

-The Riemann-Stiltjes integral.

-Convergence and uniform convergence of sequences of functions, power series.

-Differentiable functions of several variable. The Inverse Function Theorem and the Implicit Function Theorem.

## . Kursens fördelar, beakta studenternas uppfattning i kursutvärderingar.

**Kursens fördelar, beakta studenternas uppfattning i kursutvärderingar.**

This is a gateway course to a very large part of mathematics. Every course that has to do with mathematical analysis relies on this material. More or less all students agree that the material is interesting. For some students it also serves as introduction to rigorous mathematical proofs.

## . Kursens nackdelar, beakta studenternas uppfattning i kursutvärderingar.

**Kursens nackdelar, beakta studenternas uppfattning i kursutvärderingar.**

Students found the pace too rapid to properly digest the material.

## . Slutsatser samt förslag till förbättringar.

**Slutsatser samt förslag till förbättringar.**

I think it might be good not to have the exercise session immediately after the lecture, but rather on some other day of week.

The textbook (Rudin's PMA) has much to admire about it, but may not be the best fit for someone learning the material for the first time. Might consider a different, perhaps even more "chatty" textbook.