

## *Announcement*

As part of the Master of Statistics' programme I will teach in the summer term the course

### *Measure and Integration Theory (Maßtheorie)*

Content:

The aim of the lecture is to give the mathematical foundations for the course 'Stochastics I'. Beginning with the notion of sets, sequences, countability, etc. we will gather important basics of Analysis and Algebra as well as general mathematical notations and concepts. On this basis, the meaning of the terminology 'measurability' will be discussed and sets of measurable objects, the so-called  $\sigma$ -algebras, are introduced. On these sets we will define and construct measures, which will be illustrated by many examples including the important Lebesgue-measure and the class of probability measures.

A great deal of measure theory is concerned with maps from and to measurable sets. For those maps the general approach via measures gives rise to a powerful integration theory that extends the commonly known Riemann integrals extensively. This offers many useful tools to describe and handle probabilistic quantities such as random variables, probability distributions, the likeliness that certain events occur and many others.

Please note the course page: <http://www.math.hu-berlin.de/~holtz/mint>

Date and Venue:

Block course part: March 28 & 29, April 1, 2 & 3:

Lectures at 9:00h, 11:00h and exercise sessions at 13:30h, SPA1, room 203 (all times sharp!)

During the semester: Thursdays at 11:00h, RUD25, room 3.007 (7 sessions)

There will be a written exam.

References

Küchler, U., Maßtheorie für Statistiker, Springer (2016),

Schmidt, K.D., Maß und Wahrscheinlichkeit, Springer (2009),

Bauer, H., Measure and Integration Theory, de Gruyter (2001), also available in German,

Fremlin, D., Measure Theory. Volume 1 (2011), available online,

and others that will be given in the lecture and on the course page