

UNIVERSITÄT DES SAARLANDES
FACHRICHTUNG MATHEMATIK

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Functional Analysis 2

Course announcement for the summer term 2020

This course will be a continuation of Functional Analysis 1, taught by Prof. Groves during the winter term 2019/2020. Functional Analysis 2 will be divided into two parts, local convexity and operator algebras.

Locally convex spaces allow the study of notions of convergence that are not given by a norm, such as pointwise convergence of functions. They are also a convenient framework for the discussion of the important notions of weak and weak-* convergence. Topics include weak topologies, the Hahn–Banach theorem for locally convex spaces, compactness and Alaoglu’s theorem, extreme points and the Krein-Milman theorem.

The second part is concerned with the study of algebras of operators on Hilbert space. On the one hand, studying such algebras leads to insights into the structure of single operators. On the other hand, operator algebras are a fascinating topic in their own right, which has implications to group theory and mathematical physics. Topics include Banach algebras and Gelfand theory, commutative C^* -algebras and the Gelfand-Naimark theorem, states and the GNS construction, von Neumann algebras.

Time and Place: Tuesday, 16-18, SR 10; Thursday, 14-16, HS IV

Lectures will be held in either English or German, depending on the audience.