Course Announcement: Topics in the Geometry of Banach Spaces

Mathematics 663, Autumn 2023

Instructor: William B. Johnson

Prerequisites: Math 655.

Text: [AK] Fernando Albiac and Nigel J. Kalton, "Topics in Banach space theory", Springer Graduate Texts in Mathematics 233.

Exams: None.

Grading: Homework 100%. Students should hand in two or more problems the third week of class and every second week thereafter. Each student may choose problems to hand in from [AK] or from problems raised in class, so the time a participant will devote to the course outside of class can vary from minimal to quite a lot.

Description: Most of the topics are treated, to some extent, in [AK].

1. Infinite dimensional theory.

    1.1 Special Banach spaces: ℓ_p, L_p, and $C(K)$.

    1.2 How special spaces relate to general Banach spaces.

    1.3 Factorization theorems for linear operators.

2. Introduction to local (finite dimensional quantitative) theory.

    2.1 Special operator ideals, especially p-summing operators and others used in various areas of analysis.

    2.2 Finite representability.

    2.3 Dvoretzky's theorem and related topics and applications, including the J-L Lemma.

    2.4 Krivine's theorem.

Other topics may be substituted for those mentioned, depending on the interests of the students enrolled.