

Essay topics

SPECIFIC RESULTS

Riesz representation theorem – dual of $C(X)$

Dvoretzky-Rogers theorem – convergence, rearrangement and finite dimensionality

Krein-Milman theorem – extreme points of convex sets

Stone-Weierstrass theorem – density of subalgebras of continuous functions

Orlicz-Pettis theorem – weak and strong subseries convergence

James' theorem – characterization of reflexive spaces

Lomonosov's invariant subspace theorem, reference Bollobás, Chapter 16.

GENERAL

Spectral theory of linear operators

Probabilistic methods in Banach spaces

Fixed point theory (Bollobás gives a start on this)

Vector lattices

Banach algebras

Approximation theory

Compactness in Banach spaces

Bases in Banach spaces

Vector measures

Dunford-Pettis property

Approximation property

Fredholm theory

Subdifferentiability and other forms of Hahn-Banach

Books by Beauzamy, Diestel, Guerre-Delabrière will give further topics in Banach space theory; Balakrishnan, Curtain & Pritchard, Zeidler more applied topics. See also the functional analysis entry at www.math.niu.edu/~rusin/known-math/index/46-XX.html