

MATH 595
RAMSEY THEORY: FINITE OR INFINITE

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MWF 12–12:50

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This will be a course on Ramsey theory and its connections with logic (model theory and set theory). Recent years have seen a number of applications of finite and infinite dimensional Ramsey theory to dynamics of topological groups and to the structure of Banach spaces that have been of interest to logicians. In turn, these applications have been stimulating development in Ramsey theory. Furthermore, finite Ramsey theory has found connections with finite model theory, while infinite dimensional Ramsey theory have been using methods and notions of set theory, in particular, descriptive set theory.

The aim of the course will be to present elements of classical Ramsey theory, structural Ramsey theory (as developed by Nešetřil, Rödl, Prömel and Voigt), and infinite dimensional Ramsey theory with an eye on applications to dynamics and to Banach spaces.

I will be using parts of the following books and papers:

S. Argyros, S. Todorcevic, *Ramsey Methods in Analysis*, Birkhäuser, 2005.

R.L. Graham, B.L. Rothschild, and J.L. Spencer, *Ramsey Theory*, Wiley, 1980.

J. Nešetřil, *Ramsey theory in Handbook of Combinatorics*, pp.1331–1403, Elsevier, 1995.

S. Todorcevic, *Introduction to Ramsey Spaces*, 2007.