The Department of Mathematics  
2020–21–B term

Course Name  pcf theory and its applications  
Course Number  201.2.5471  
Course web page  https://www.math.bgu.ac.il//en/teaching/spring2021/courses/pct  
Lecturer  Prof. Menachem Kojman, <kojman@bgu.ac.il>, Office 111  
Office Hours  https://www.math.bgu.ac.il/en/teaching/hours  

Abstract

Requirements and grading  

Course topics

The course will present the fundamentals of Shelah’s pcf theory and some of its many applications in cardinal arithmetic, infinite combinatorics, general topology and Boolean algebra.

Pcf theory deals with the spectrum of possible cofinalities of reduced products of small sets of regular cardinals. The pcf theorem asserts the existence of a sequence of generators for the set of possible cofinalities.

The most well known application of the theory are Shelah’s bound on the powers of strong limit singular cardinals, most notably on the power of the first singular cardinal, which actually follows from the more informative bound on the covering number of countable sets. These results will be presented in full. Other applications which will be given are the construction of topological spaces, embeddability of Boolean algebras, extensions of measures and bounds on coloring numbers of graphs.

1Information may change during the first two weeks of the term. Please consult the webpage for updates.