Discrete Geometry

Prof Shakhar Smorodinsky

Spring 2018

The course is intended for 3rd year undergraduate as well as M.Sc and Ph.D. students both in computer science and mathematics. We will touch main topics in the area of discrete geometry. Some of the topics are motivated by the analysis of algorithms in computational geometry, wireless and sensor networks. Some other beautiful and elegant tools are proved to be powerful in seemingly non-related areas such as additive number theory or hard Erdos problems. The course does not require any special background except for basic linear algebra, and a little of probability and combinatorics. During the course many open research problems will be presented.

Detailed Syllabus:


- Arrangements: Davenport Schinzel sequences and sub structures in arrangements. Geometric permutations.

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Topics that will be covered include:

- Fundamental theorems and basic definitions (convexity, Helly’s thm, Radon’s thm, Caratheodory thm, etc)
- Geometric graphs
- Coloring and hitting problems for geometric hypergraphs
- Arrangements : Davenport Schinzel sequences and sub structures in arrangements.
- Geometric Ramsey and Turan type theorems

For more details contact the instructor by phone: 08-6461604 or by email: shakhar@math.bgu.ac.il