Combinatorics, Graph Theory and Applications
Doctoral Program on Applied Mathematics
Universitat Politècnica de Catalunya

Advanced Course
Combinatorial Convexity
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The course will cover several topics in combinatorial convexity, where theorems of Caratheodory, Helly, Radon, and Tverberg are the typical and classical results. We plan to investigate weak epsilons-nets, halving lines and planes, the (p,q) problem and its solution, extensions to lattice convex sets, and colourful versions of theorems of Helly, Caratheodory, Radon, Tverberg, and the like. Further possible topics are transversals, lattice polytopes and random polytopes. The methods here use tools from linear algebra, combinatorics, topology, geometry, probability theory, and geometry of numbers.

Futher information: www.combraph.upc.edu