# References for Math 580A, Topological Combinatorics, Fall 2017

A big chunk of the course will cover Matousek's book Using the Borsuk-Ulam Theorem.

Other course material is coming from:

Welker, V., Ziegler, G., Zivaljevic, R., Homotopy colimits -- comparison lemmas for combinatorial applications

Barmak,J. Algebraic topology of finte spaces and applications

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**Some surveys of topological combinatorics:**

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Karasëv, R. N., Topological methods in combinatorial geometry Uspekhi Mat. Nauk 63 (2008), no. 6(384), 39–90; translation in Russian Math. Surveys 63 (2008), no. 6, 1031–1078

Zivaljevic, R., Topological Methods In Discrete Geometry, preliminary version

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**Applications of Borsuk-Ulam and equivariant topology**

Anderson, Laura; Wenger, Rephael Oriented matroids and hyperplane transversals. Adv. Math. 119 (1996), no. 1, 117–125.

Bárány, I.; Lovász, L., Borsuk's theorem and the number of facets of centrally symmetric polytopes. Acta Math. Acad. Sci. Hungar. 40 (1982), no. 3-4, 323–329.

Blagojević, Pavle V. M.; Ziegler, Günter M. Convex equipartitions via equivariant obstruction theory. Israel J. Math. 200 (2014), no. 1, 49–77.

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Dobbins, Michael A point in a nd-polytope is the barycenter of n points in its d-faces. Invent. Math. 199 (2015), no. 1, 287–292.

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**Topology of posets**

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Anderson, Laura; Davis, James F., Mod 2 cohomology of combinatorial Grassmannians. Selecta Math. (N.S.) 8 (2002), no. 2, 161–200.

Björner, Anders; Tancer, Martin Note: Combinatorial Alexander duality—a short and elementary proof. Discrete Comput. Geom. 42 (2009), no. 4, 586–593.

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Björner, Anders; Wachs, Michelle L., Shellable nonpure complexes and posets. II. Trans. Amer. Math. Soc. 349 (1997), no. 10, 3945–3975

McCammond, Jon; Noncrossing hypertrees, arxiv preprint

Shareshian, John; Woodroofe, Russ, Order complexes of coset posets of finite groups are not contractible. Adv. Math. 291 (2016), 758–773.