

Topology for Computing, MAT 5907, Spring'14

The course is a natural continuation of “Homology of Simplicial Complexes” taught in Fall'13. The goal of the course is to introduce and discuss several topological concepts aiming at understanding their quite exciting applications to structural biology, surface recognition, and shape description – to mention some of them. The emphasis will be put on the math aspects of the theory, but we will do our best to understand the application part as well.

Although the intent is to keep the course as independent as possible, introducing all the needed notions and concepts along the way, some knowledge from Algebraic and Differential Topology, as well as from Algebra (for the latter - at the level of our Topics in Algebraic Structures and Graduate Algebra courses) would be very helpful.

Suggested literature to be used

A. Zomorodian “Topology for Computing”, Cambridge University Press

H. Edelsbrunner and J. Harrer “Computational Topology”, a web draft

as well as research papers.

The participants in the course are supposed to take active part in the class work. There will be small projects assigned too.