Course title: Topological Data Analysis

Course code: 63542

ECTS: 6

Professor: Ziga Virk

Master's program

Prerequisite knowledge :

- Basic set theory: union, intersection, product, ...
- Basic lineat algebra: vector spaces, basis, dimension, linear maps, matrix representation, rank, Gauss elimination
- Basig geometry: planar geometry, convex sets, convex combination

Short course decription:

- Metric spaces, homotopy equivalence, homeomorphisms
- Planar triangulations, including Delaunay triangulation
- Simplicial complexes
- Classification of surfaces
- Constructions of simplicial complexes
- Algebraic prerequisits
- Homology
- Persistent homology and its stability
- Discrete Morse theory
- We will be following the textbook freely available at http://zalozba.fri.uni-lj.si/virk2022.pdf