CS 593000-TDA: Topological Data Analysis
Spring 2023
(Dynamic Schedule)

Lectures	Materials	Comments
Jan 10	Basic topology I	
Jan 12	Basic Topology II	
Jan 17	Maps	
Jan 19	Manifolds	
Jan 24	Simplicial complex	
Jan 26	Delaunay, Čech, Vietoris-Rips, Witness, Graph Induced complexes	
Jan 31	Chains, Boundaries, Cycles, Homology groups, Induced maps	
Feb 02		
Feb 07	Filtrations, Persistent homology	
Feb 09	Persistence Algorithm	
Feb 14	Persistence Diagram, Persistence Modules	
Feb 16	Simplicial maps, Zigzag Persistence	
Feb 21	Algorithms for Zigzag and Towers	
Feb 23	Level set zigzag and extended persistence Algorithms	
Feb 28	Exam	
Mar 02	Point cloud data	
Mar 07	Homology Inference Algorithms	
Mar 09	Optimal Cycle Basis: Algorithms	Term paper topic
Mar 21	Optimal Persistent Cycles: Algorithms	
Mar 23	Optimal Cycles: Continued	
Mar 28	Reeb Graphs	
Mar 30	Reeb Graph Algorithms	
Apr 04	Graph Distances	
Apr 06	Multiparameter persistence (MP)	
Apr 11	Decomposition Algorithm	
Apr 13	Multiparameter Persistence Distances	
Apr 18	MP Distance Algorithms	
Apr 20	Applications	
Apr 25	Wrap-up	TP submission
May 02	Final	8-10am, LWSN B134

Instructor: **Tamal K. Dey**.
Classes: **TTH 1:30–2:45**
Office hours: **TTH 3:00-3:30 pm. or by appointment**
Grading Policy: **Midterm Exam:** 30%**, Term paper or project:** 30%**, Final** 40%
Course web-page

`https://www.cs.purdue.edu/homes/tamaldey/course/CTDA/CTDA.html`