

Course Syllabus

CSU DSCI 475: Topological Data Analysis, Spring 2021

Instructor: Henry Adams

Email: henry.adams@colostate.edu

Lectures: TR 2:00–3:15pm online, on Zoom, from January 19 until March 11.

Class Webpage: <https://www.math.colostate.edu/~adams/teaching/dsci475spr2021/>

Textbook:

There is no textbook for this course! Resources will be posted on our webpage linked above.

Course Overview: Topological techniques for analyzing high-dimensional or complex data. The shape of data may reflect patterns within; e.g. connected components may correspond to groupings, or a circular shape may correspond to periodic behavior. Topics include clustering, dendrograms, a visual introduction to topology, data modeling and visualization, and selected topics from nonlinear dimensionality reduction, graph-based models of data, Reeb graphs, multi-scale approaches to data, and persistent homology.

Prerequisites: The official prerequisite is DSCI 369 or MATH 369 (linear algebra). The unofficial prerequisite is a certain level of data science or mathematical experience.

Requirements: During online teaching, I'd rather spend more time on teaching and learning, and less time on grading and evaluation. For this reason, the default is that your course grade is based 100% on participation and attendance. I will provide you with regular updates of which letter grade you are on pace for.

Respecting your time: If I ever get cut off the zoom call for more than 10 minutes (or am more than 10 minutes late) due to network issues, then class is cancelled for the rest of the day, and I will follow-up with you all via email.

Academic Policies and Integrity: Students are expected to adhere to the CSU Academic Integrity Policy as found on the Students' Responsibilities page of the [CSU General Catalog](#). Posting course materials on external sites violates the CSU Student Conduct Code.

Colorado State University is committed to providing reasonable accommodations for all persons with disabilities. Students with disabilities who need accommodations should first contact the [Student Disability Center](#) in order to request accommodations for this class.

CSU Principles of Community:

Inclusion — Integrity — Respect — Service — Social Justice

See the additional detail at the [VPD's website](#).