MATH 425/525: Differential Geometry I (Term 1, 2024)

Description: This is a course on smooth manifolds. These mathematical objects are generalizations of curves and surfaces to higher dimensions.

Topics:
- Definition and examples of manifolds
- Tangent vectors
- Submersions, immersions and embeddings
- Submanifolds
- Lie groups
- Vector fields
- Lie derivatives
- Vector bundles
- Tensors
- Differential forms
- Integration on manifolds
- De Rham cohomology

Prerequisites: Undergraduate analysis (e.g. MATH 320) and linear algebra.

Textbook: J. Lee, *Introduction to Smooth Manifolds*, Second Edition.

Homework: Homework will be typed or scanned and submitted on the Canvas page MATH 425/525. You are encouraged to work in groups on the homework, however you must write up your own solutions.

Grading Scheme: Homework 100%

Course Policies:

- **Missing/late homework:** No late homework will be accepted. You can receive one concession during the term by submitting a Department of Mathematics self-declaration form (which can be found here). The weight of the missed homework with accepted concession form will be transferred to the other assignments. More information on UBC's policy for academic concessions can be found here.