**Arizona State University**
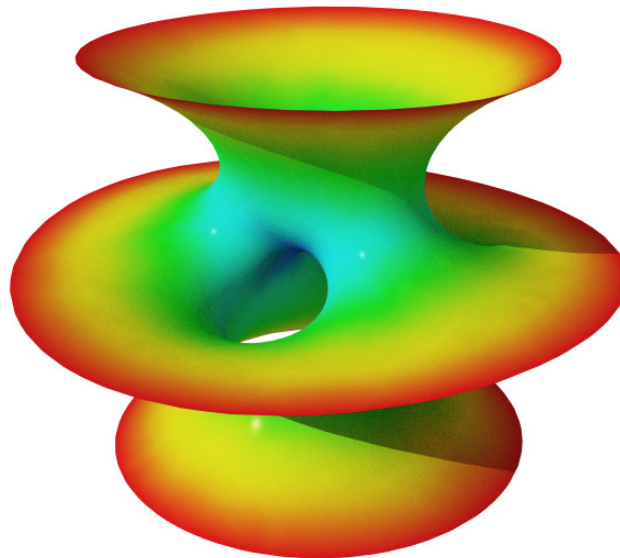**MAT 598, Spring 2025**
**Tu Th 1:30-2:45 PM**
**Instructor: Brett Kotschwar**

# Introduction to Geometric Structures

**Course description:** This course will be an introduction to differential and Riemannian geometry, including such concepts as vector bundles, connections, Riemannian metrics, geodesics, the exponential map, Jacobi fields, curvature, and holonomy, as well as a primer to the techniques of comparison geometry and their application to the study of the relationship between the topology of manifolds and their curvature.

**Prerequisites:** Completion of MAT 502 preferred, as some prior exposure to smooth manifolds will be assumed. Students who are interested in the course but are unsure whether they have the necessary background are encouraged to contact the instructor at `kotschwar@asu.edu`.

**Textbooks:**

- *Introduction to Riemannian Manifolds (2nd Ed.)* by John M. Lee, Springer, 2018.

- *Riemannian Geometry* by Manfredo P. Do Carmo, Birkhäuser, 1992.