Geometry and Topology of Manifolds, II
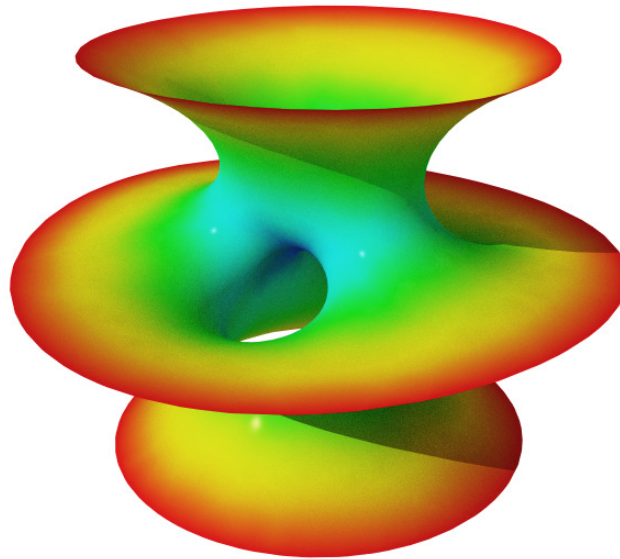
Course description: The class is an introduction to fundamental concepts and methods in differential geometry and topology. With MAT 501, it is meant to prepare the student for the Qualifying Exam in Geometry and Topology.

Prerequisites: Completion of MAT 501 is not strictly required, but a solid background in point-set topology, abstract linear algebra, and multivariable calculus, as well as a basic understanding of the fundamental group and the theory of covering spaces 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`.

Topics: Smooth manifolds, smooth maps, tangent vectors, embeddings, Lie groups, vector and tensor fields, vector bundles, Riemannian metrics, differential forms, integration on manifolds, degree theory, and De Rham cohomology and applications.

Textbook: *Introduction to Smooth Manifolds (2nd Ed.)* by John M. Lee, Springer, 2013.