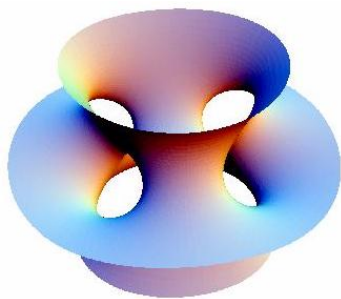


## MATH 424 - DIFFERENTIAL GEOMETRY



### Description:

Differential geometry studies the properties of curves, surfaces, and higher-dimensional curved spaces using tools from calculus and linear algebra. A central concept in differential geometry is curvature. It is used to describe geometric features of objects such as a race track or the universe. In this course, we will study the curvature of curves, surfaces and higher dimensional spaces. We will study the mean curvature and Gauss curvature of surfaces, geodesics and parallel transport, Gauss' Theorema Egregium, and the Gauss-Bonnet Theorem.

### Students who would benefit from taking this course:

This course would be of interest to any student in pure or applied mathematics. Students interested in theoretical physics are also strongly encouraged to take this course, as differential geometry is the natural language for modern theoretical physics; in particular, for general relativity and superstring theory. In computer science, computer graphics and computer-aided geometric design draw on ideas from differential geometry. Differential geometry is used in digital signal processing, computer vision, and image processing. Finally, differential geometry also has applications in control theory, which may be of interest to students in engineering.

**Pre-requisites:** Linear Algebra and Calculus in two and three variables. See UBC course calendar for details.

Please feel free to contact me for further details if you have questions.

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