**Summer 2020 <u>Online</u> Mathematics Graduate Course at WIU**
Running from June 1 to July 24, 2020

Math 554: Methods of Symmetry in Algebra, Geometry and Topology

Instructor: Dr. LaFountain

Course description: Symmetry is everywhere in mathematics and its applications, and often problems can be made much simpler by understanding and leveraging symmetries. In mathematics, the symmetries of any object or space can be formalized using groups coming from abstract algebra. As a result there is a wonderful interplay between groups and spaces for which these groups are symmetries, and one can often learn things about a group from the space, and learn things about a space from its group of symmetries. This interplay is formalized in a branch of mathematics called geometric group theory.
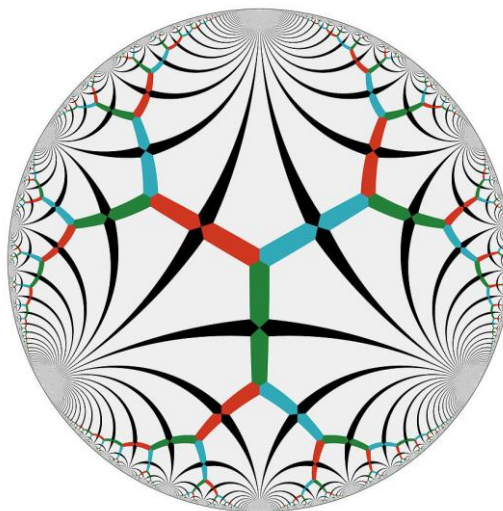
In this course, my goal will be to gently open a window into geometric group theory for all students, regardless of their background, so as to allow them to appreciate the beauty and utility of this current area of research. I will emphasize lots of easily visualized examples throughout the course, so as to make the material very concrete. Any definitions or results from abstract algebra that we use I will first review and explain, so as to make sure everyone is prepared for the next step in the course. Along the way we will prove some beautiful theorems that illuminate familiar groups, such as symmetry groups of polygons, and learn about all kinds of new, more exotic, groups as well, including those groups giving symmetries of the above figure!

For questions or to register, contact Dr. LaFountain at d-lafountain@wiu.edu

This course is part of a new online *Masters of Science in Teaching Mathematics (MSTM)* program at WIU: Learn more about that program here

Math 656: Advanced Perspectives of Topics from Secondary School Mathematics: Algebra and Statistics will also be offered online this summer.
To find out more about that course, click here