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Discrete Mathematics Seminar

Time: Friday, 14 April 2017, 2:15 – 3:15 PM
Location: 237 Derrick Hall
Title: Vertex-Colouring and the Limits of Edge-Colouring Techniques
Speaker: Dr. John Asplund, Department of Technology and Mathematics,
            Dalton State College

Abstract:

What is the minimum number of colours needed to colour each state in the USA so that no two states sharing a border receive the same colour? Colouring in this manner is called *vertex-colouring.* Though simply stated, this question became quite difficult and famous when asking to prove the minimum number colours needed to colour all maps is four. Even though there was a correct proof after 125 years, it was not until 150 years after the first records appeared for its proof that everyone started to believe this to be "solved". In this talk we discuss some new problems involving vertex-colouring as well as the history of the problem. Colouring the edges is just as interesting as colouring the vertices, as it is equally riddled with applications tied to scheduling and fiber-optic communication. There is an equally daunting (possibly) edge-colouring conjecture to the vertex-colouring result above. Recent techniques have shown promise towards the proof, but we will discuss why this is not enough.