Einstein’s theory of gravity, which has seen a recent centennial celebration, and witnessed confirmation of its predication of gravitational waves, is a geometric theory of space-time. The theory has afforded geometric analysts a treasure trove of problems to consider in geometry and differential equations, some of which have had applications in pure mathematics. In this talk we motivate the notion of curvature of surfaces, taking a whirlwind tour of differential geometry. We will then attempt to connect the dots to an application of the Gauss-Bonnet Theorem in geometry to Einstein’s theory of gravity, and to an application of an idea from physics to a problem in pure geometry. Expect lots of gesticulations in place of proofs, punctuated by several key equations, with a few not-so-skillfully drawn sketches in between!

Lunch will be available for colloquium guests after the presentations.