

1035-I1-1956 **Phil Gustafson*** (pgustafs@mesastate.edu), Mesa State College, Mathematics Department,
1100 North Ave, Grand Junction, CO 81501. *Using Blue Man Group and Sound Waves to
Introduce Fourier Analysis in Calculus.* Preliminary report.

Fourier analysis is widely used in our technology and communications rich society, and yet our math majors often have little or no exposure to this important topic. However, second semester calculus students are in an ideal position to learn basic Fourier analysis in a single class period, and technologically-based teaching demos can make all the difference in getting them excited about it. When studying Taylor series, students are often uncomfortable with the idea of representing a given function as an expansion of simpler functions. However, with the help of sound wave visualization demos, students can see why a sine and cosine (Fourier) expansion of a sound wave makes sense. In this talk we discuss how YouTube videos and student-generated sound waves provide effective demonstrations of the usefulness of such expansions. In particular, we will show how aspects of Blue Man Group performances can be used to motivate and understand Fourier series, the computation of Fourier coefficients, and basic sound file compression. Video clips (or still frames) along with sound wave demonstrations will be given. (Received September 20, 2007)