

1125-VQ-2707 **Jason Quinley*** (jquinley@brookstoneschool.org), 9 Spruce St, Columbus, GA 31904. *Vector Calculus as a Path to STEM Research*
Notes from the Secondary Level. Preliminary report.

In this talk we give several highlights from teaching a *Vector Calculus* seminar to advanced high-school seniors. Based on the texts from *Herod and Cain* and *Shifrin*, this course blends rigor and intuitive approaches in a manner beyond the typical AP curriculum. This course also gives students both a means for mastering previously seen material and a springboard for encountering more advanced mathematics at the college level. For some students taking BC Calculus concurrently, this course also aids mastery by previewing AP material from a different perspective.

This class incorporates research projects using the \LaTeX software, TikZ, visualization programs like *Desmos* and *Wolfram Alpha*, and a 3-D printer. The added benefit occurs from the \LaTeX software as a gentle introduction into programming, as many high school students have yet to take a course in Java or Python. Samples of student work on harmonographs, Lissajous curves, centroids, optimization in multiple dimensions, and differential equations in epidemiology will be presented. (Received September 20, 2016)