



University of
Central Arkansas™

UCA Research in STEM Education Seminar

Speaker: Dr. Jason Martin
UCA Department of Mathematics

Title: An approximation framework for calculus instruction: Addressing accessibility and supporting conceptual gains.

Date: Tuesday, September 9, 2014

Time: 1:40-2:30 p.m.

Place: MCS 115



Abstract: How do we make calculus conceptually accessible to more students while simultaneously increasing the coherence, rigor, and applicability of the content? Recent studies have indicated that an approximation and error analysis approach to curriculum and instructional design can support a productive and coherent conceptual foundation for students' reasoning about concepts defined in terms of limit. In my talk we explore the affects of such an approach to curriculum design systematically implemented in the form of 30 labs spread throughout the first two semesters of calculus. Supported by a three year grant from the National Science Foundation, I worked with other instructors across the United States to collect pre-test and posttest data from students in calculus classrooms implementing these labs. I will reveal an early analysis of year one data that indicate conceptual gains above the gains previously observed from students taught without approximation curriculum.