



Department of Mathematics and Statistics Colloquium

Tuesday February 5

AMB 164 4:00 pm

**Persistence and Characteristics of Calculus I Students  
in STEM Disciplines –  
A Comparative Study of Three Versions of Calculus I**

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**Abstract**

Student persistence in science, technology, engineering, and mathematics (STEM) fields has been an important focus in mathematics education research. A nearly constant low rate of STEM student enrollment coupled with a high drop-out rate has been a striking issue. Many studies have been dedicated to the investigation of the influential factors that play a role in this problem, and the factor that has been cited most is the learning experience in an introductory mathematics course – Calculus I. Research has indicated that there is a strong relationship between STEM persistence and student attributes and student perceptions of pedagogy. In our study, we examined the effect of three different course settings on student attributes toward mathematics including attitudes, beliefs, enjoyment, confidence, and desire for more mathematics; moreover, we investigate the impact of three different Calculus I course settings on the relationship between attitudes and persistence as well as student perceptions of pedagogy and persistence. We found that student experiences in three versions of Calculus I have an effect on both students attributes; and the impact of the course structures is different, some aspects of the course experiences themselves are responsible for these differences, not from the student demographic backgrounds within those structures. More importantly, we found that some course structures moderated the relationship between STEM persistence and student attributes and student perceptions of pedagogy.

Refreshments at 3:45