

1096-VB-1134      **Alison Ahlgren Reddy\*** (aahlgren@illinois.edu) and **Marc A. Harper**  
(marcharper@ucla.edu). *Identifying Concepts Critical for Success in Calculus at the University of Illinois*. Preliminary report.

Detailed data on students mathematical preparedness obtained from the placement program at the University of Illinois allowed a redesign of the university's precalculus course to better prepare students to be successful in Calculus I. The theory of knowledge states and placement assessments can be used to determine which of 200 topics and problem types are strongly associated with student course outcomes.

Our analysis detects the mathematical strengths and weakness of the students entering and exiting the precalculus course with unprecedented specificity, and in several topic areas, such as trigonometry. The results of our study were used to modify curricular emphasis in the course. Placement assessments for Calculus I students identifies predictive concepts for success in Calculus I, and the precalculus course was further modified to place additional emphasis on these important topics.

Entry and exit student data for precalculus will be shown highlighting key concepts for Calculus I success. The data also allows comparison of the students who enter Calculus I directly their first year versus those who take our precalculus course. Identifying the critical concepts for success has enabled us to better students to compete with those who enter Calculus I directly. (Received September 13, 2013)