

1086-N1-1420

**Michael A. Tallman\*** ([michael.tallman@asu.edu](mailto:michael.tallman@asu.edu)) and **Marilyn P. Carlson** ([marilyn.carlson@asu.edu](mailto:marilyn.carlson@asu.edu)). *A Characterization of the Cognitive Demand of Calculus I Final Exams in U.S. Colleges and Universities.*

The final exam in a mathematics course is one source of information about the nature and level of student learning that is expected in the course. In this study, a three-dimensional framework was developed to analyze 150 post-secondary calculus I final exams from U.S. colleges and universities in an effort to determine the skills and understandings that are currently being emphasized in college calculus. Results indicate that Calculus I final exams generally require low levels of cognitive demand, seldom contain problems stated in a real-world context, rarely elicit explanation, and do not require students to demonstrate or apply their understanding of the course's central ideas. Data from a survey that investigated instructors' beliefs about teaching, the role of exams and homework in learning, etc. was completed by the same instructors and was used to investigate instructor beliefs that correlate with exams that are more and less conceptual in their focus. We found that there is a misalignment between the nature of calculus final exams and instructors' perceptions of their exams relative to the extent to which students are asked to explain their thinking and the proportion of exam items that focus on skills and methods for carrying out computations. (Received September 21, 2012)