1116-Q5-2384 **William L Hall*** (wlhall@ncsu.edu), 502P Poe Hall, 2810 Stinson Dr., Raleigh, NC 27695. *An investigation into learning about integrals as participation in different professional communities.*

Introductory calculus at the undergraduate level is largely a service course to a variety of academic majors. This is true primarily because most students intending to major in mathematics arrive to college with calculus credit and rarely end up taking Calculus I (Bressoud, Carlson, Mesa, & Rasmussen, 2013). While there has been a good deal of cognitive research into how students understand the calculus concepts of limit, derivative, and integral, there has been very little research into how these calculus concepts are understood in the various professions that require students to take Calculus I in college. In this report, I share the results of both a national survey and clinical interviews concerning how three such communities think about and use integrals in the authentic practice of their field. The three communities I investigated were engineering, biological and life sciences, and business and were made up of undergraduate students, faculty members, and practicing professionals from across the country. Findings include summaries of the ways in which the different communities describe the integral and the contexts and applications the members indicated were most useful in their field. Implications for the future of undergraduate calculus instruction are discussed. (Received September 22, 2015)