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**John L. Scharf\*** (jscharf1@bresnan.net), Department of Mathematics and Engineering, 1601 North Benton Avenue, Helena, MT 59625. *Using Integrated First-Year College Mathematics Courses to Challenge and Motivate Students Who Have Had Calculus and to Level the Playing Field for Those Who Haven't.*

Increasingly, college and university professors encounter high-quality, first-year calculus students who have already had calculus. At the same time, a significant proportion of their first-year calculus students are high quality, but they have not had calculus. The challenge for the professors is to best serve all of their students by providing courses that challenge and motivate those students who have already had calculus and, at the same time, do not overwhelm those who have not had calculus. To address this problem, the author proposes integrated, first-year mathematics courses that include significant coverage of topics in difference equations, sequences and series, systems of difference equations, linear algebra, calculus, and differential equations. The author taught these courses at Carroll College for five years, and reports on the results. Specifically, both groups of students found the courses challenging and interesting, the material did not overwhelm the students, and the students were prepared to transition into typical sophomore level mathematics courses in multivariable calculus, differential equations, and linear algebra. The Carroll course designs were based upon the results of three NSF funded curriculum projects. (Received September 19, 2007)