Spelman College has a long history of educating African-American women for leadership in the liberal arts tradition. In this talk we give attention to an unfolding story of how the College successfully intensified its efforts and achieved success over time in mathematics and the sciences. We explain how a classic mathematics curriculum combined with a series of special programs that address the particular needs of the College’s students, including the need for mentoring, financial support, access to scientific professions, and an early exposure to research, has led to success by large numbers of students. We make note of some common elements that have enhanced student development, including the critical role of scholars programs. Today, this undergraduate Historically Black College of approximately 2000 students celebrates a unique level of productivity in mathematics, the sciences and engineering at the undergraduate and graduate levels among its students and alumnae. Our goal is to share some strategies that may be adaptable in departments working to increase success and diversity among its mathematics graduates. (Received September 19, 2016)