We are beginning a new program to prepare students in the mathematical sciences to succeed in careers in business, industry, and government (BIG). Funded by a $2 million NSF grant, this program will (a) help undergraduate mathematical sciences majors be aware of their choices for non-academic careers and opportunities for internships, (b) help mathematics faculty be more fully aware of non-academic career options for their students, make connections with people working for local BIG organizations, and develop internship opportunities for their students, (c) offer undergraduate students the opportunity to have a research experience related to real-world problems from BIG, and (d) provide training to undergraduate students and faculty in how to successfully work on problems from BIG and develop the needed communications skills. To accomplish these objectives, we will develop a set of educational and informative videos, conduct summer training workshops for faculty, organize a semester-long course and competition for undergraduate students containing a strong undergraduate research component, and organize a summer recognition conference for participating undergraduate students. (Received September 17, 2013)