

A Comprehensive Model For Ensuring K – 12 Students are Mathematically Prepared and Keenly Acclimated to Enter Engineering Disciplines

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North Carolina State University, located in Raleigh, NC, USA, is the largest state-supported school of the sixteen-campus University of North Carolina system. NC State is organized into 10 schools and colleges with more than 27,500 students. Founded in 1887, NC State maintains a commitment to teaching, research, extension, and public service. In fulfilling this commitment, the University plays a key role in the economic development of the state.

The College of Engineering at NC State is among the best in the country, offering outstanding degree programs and preparing students for exciting and rewarding careers. The College of Engineering has 14 engineering programs accredited by the Accreditation Board for Engineering and Technology (ABET). The Computer Science Accreditation Board (CSAB) accredits our undergraduate computer science program. Graduates of our programs are heavily recruited for positions in a variety of settings, including business, construction, transportation, hardware and software development, and design. They are also extremely competitive for admissions to graduate and professional schools, including law and medicine.

In an effort to increase the number of high school graduate who have completed rigorous mathematics and science preparation during their K – 12 school years, faculty and administrators have entered into a partnerships with the local public school system. This partnership is centered on a million dollar K – 12 grant provided by the National Science Foundation. The partnership serves as a model for schools across the state of North Carolina with the techniques and activities developed becoming part of the program being used as a model by other states. The project upon which our partnership is based has resulted in the preparation of a countywide science reform effort to change to inquiry-based science teaching in every school in the county of over 100,000 students. In addition to carrying out a partnership between this school system and the NC State University Colleges of Education and Engineering, we also continue to administer several recruiting, outreach, summer orientation and campus visitation programs that help to enlighten prospective engineering students.

The full paper will describe our partnership and activities with the local school system, to include technical assistance, science and mathematics reform, training, and orientation provided by our University to the public school teachers. The paper will also describe several proven activities that continue to insure prospective students have sufficient knowledge on which to make an intelligent decisions about which engineering discipline to pursue, and that they have an excellent outlook on employment and graduate school opportunities even as the are preparing to enter their first year of college. The paper will conclude with data that supports our claims to success at improving mathematics and science preparation of K – 12 public school students, and also evidence these students are indeed enrolling in our College of Engineering.

Key words: K – 12 education, mathematics preparation, outreach, teacher preparation, student recruiting