



BEYOND THE DREAM:

*From Developmental Mathematics to
Engineering Careers for Underrepresented Minorities*

A National Demonstration Project

The National Action Council for Minorities in Engineering, Inc. (NACME) recently received a one-year \$91,000 planning grant from the Lumina Foundation for Education to develop a comprehensive plan for increasing the number of students who begin their community college career in developmental mathematics and move on to complete the bachelor's degree in engineering. The plan will build on the pioneering work of the Achieving the Dream (AtD) community colleges in improving student success rates in developmental mathematics and the national network of college and university partners that have collaborated with NACME for nearly 35 years, and who are responsible for producing nearly one-third of underrepresented minority students in the nation graduating with engineering degrees.

The relative absence of underrepresented minorities in scientific and engineering study and careers is the "new" American dilemma. Not unlike the United States societal dilemma postulated by Gunnar Myrdal more than 60 years ago, this new dilemma comes from our nation's failure to educate and develop a growing proportion of its potential talent base while its need for people with skills in science and engineering is escalating.

More attention must be focused on the community college pathway to engineering careers for underrepresented minority students. As of January 2008, 47 percent of the nation's African American undergraduates, 55 percent of Latino undergraduates, and 57 percent of American Indian undergraduates are enrolled in community colleges. Additionally, 50 percent of African American, 55 percent of Latino, and 64 percent of American Indian/Alaska Native science and engineering bachelor's and master's degree recipients in 2004 and 2005 attended community colleges.

NACME has identified 34 AtD community colleges that have formal or informal transfer and articulation relationships with 20 NACME partner universities. NACME will convene a Leadership Roundtable of distinguished experts in mathematics education, engineering education, and learning support services to design pedagogy and learning support programs that increase awareness of engineering careers and engineering school requirements, and that integrate engineering-focused, activities-based, project-based and problem-solving based learning strategies into developmental mathematics coursework. The goal is to facilitate the successful transition of students who begin in developmental mathematics at an AtD community college into higher level mathematics courses, successful completion of the A.S. degree program in Engineering Science at the community college, and successful completion of the B.S. degree in Engineering at one of the 20 NACME partner universities.

NACME believes that among those students who begin their community college careers in developmental mathematics are the future engineers needed to provide the scientific and engineering skills to solve the problems of energy independence, environmental sustainability, infrastructure replacement and many other pressing issues.

The Principal Investigator (PI) for the project is Dr. Irving Pressley McPhail, Executive Vice President and Chief Operating Officer at NACME. Dr. McPhail is a leader in the community college movement and the AtD initiative, having previously served as Chancellor of The Community College of Baltimore County and President of St. Louis Community College at Florissant Valley. He currently serves as an AtD Coach at Prairie View A&M University, one of NACME's 50 Partner Universities.

NACME is at the forefront of the effort to provide opportunities in engineering for underrepresented minorities. Since the organization's founding in 1974, more than 22,000 minority engineering students have received more than \$1114 million in NACME scholarships and support at 160 colleges and universities across the United States. In partnership with some of the country's largest corporations, NACME is also acting to bring more of these students into the engineering pipeline at an earlier age.

Achieving the Dream (AtD) is a multi-year national initiative to help more community college students succeed. AtD is particularly concerned about student groups that traditionally have faced significant barriers to success, including students of color and low-income students. The initiative aims to help participating colleges identify at-risk student groups in their student populations and then design and implement intervention strategies that will increase the success of these at-risk groups.