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Diversity: Critical to Our Educational Mission

by [Dean Thomas L. Magnanti](#), Vol. 1, No. 5, September 2004

"The progress in diversity made by MIT will help the entire nation because it will serve as a role model for other universities." – Donna Nelson, Associate Professor of Chemistry at the University of Oklahoma, visiting MIT on a grant from the Ford Foundation to disseminate the results of her surveys on faculty diversity in the 50 top U.S. academic institutions

Increasing diversity within the MIT School of Engineering, particularly among our faculty, has stood as [one of the School's key goals](#) in my nearly six years as Dean. At MIT, we welcome individuals representing all segments of our population – embracing ethnic, racial, and gender diversity, as well as individuals of any economic status, sexual orientation, and national origin. Diversity in our educational community is critical to achieving MIT's and the School's educational mission.

I am proud that we have historically been at the leading edge in recruiting and retaining people from groups that have traditionally been, and continue to be, underrepresented in engineering. We have made steady progress in increasing the numbers of our women and minority faculty members. Nineteen women have joined our faculty in the past three years alone, and now 50 of the 357 full-time faculty members in our eight departments and two divisions are women. [[2006 figures](#) *] Three minority faculty members are joining the School, bringing the total to 18 in our ranks who are African American or Puerto Rican. Despite this progress, we still have much to do to create and maintain a more diverse community at all levels, but especially among our graduate students and faculty.

Let Me Tell You Why These Efforts Are Important

Two reasons stand out. First, we want to attract the best and brightest students and faculty to MIT, independent of gender, independent of race. We want to avail ourselves of the widest range of talents and attract people of high capability broadly from all segments of society. We profit from having the full spectrum of diversity represented on our campus and within the engineering community at large. Simply put, our diversity efforts are important to us because we believe they make MIT a better institution. Diversity is a matter of self interest. (Please read more about this on our [Diversity Initiative](#) pages.)

Second, we believe that we provide a better education for all of our students if our campus is more reflective of our larger world. Through

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the intellectual stimulation of a diverse campus community, MIT seeks to provide the very best education possible to all our students and to serve the nation's need for a pool of highly qualified professionals, including those who are underrepresented in science and engineering. Our students profit by having an educational experience that fosters living, studying, and working productively with people of different backgrounds and experiences, enhancing their ability to solve real-world problems in an increasingly diverse nation and world. The experiences and perspectives of minorities and women are different from those of non-minorities and men, and the experiences and perspectives of our international students are different from those students from the United States. Diverse viewpoints create a richer educational experience for everyone. For example, a recent study conducted at Stanford University suggests that in college discussion groups, exposure to "minority influence" – students from underrepresented minorities or those holding opinions in the minority – leads to higher levels of complex thinking, a greater range of perspectives, and a willingness and ability to change.^[1] At MIT, we learn through the interactions we have where we live and work – in our dormitories, our laboratories, and our classrooms. It benefits us all to be a more diverse community. We are a variegated society and profit by being a variegated institution.

As compared to the field of engineering in higher education in general, MIT does well in attracting women and minorities, but we don't do well enough yet to fulfill our educational mission. In the MIT School of Engineering, about 34% of our undergraduate students and about 24% of our graduate students are women – for undergraduate students that's nearly twice the average for engineering schools across the country (19%) and higher than the national average for graduate engineering students (21%). About 23% of our engineering undergraduate students are African American, Hispanic, or Native American, and 4% of our graduate students are from these underrepresented groups – compared with a national average in engineering of almost 14% and 4%, respectively.^[2]

The "pipeline" issue

Each year, women receive 10% to 12% of doctorates awarded in engineering nationally, and typically African Americans receive about 2% and Hispanics 4%. Consequently, the nation graduates about 250 minority engineering Ph.D.s each year.^[3] Since these graduates are in great demand by industry, government, and other universities, the available talent pool for MIT is quite limited. Recently, the MIT faculty voted to very significantly increase the number of minority faculty in the next decade. Doing so is critical to providing the kind of diverse campus community that is at the heart of the MIT educational experience and is critical to the vitality and quality of our faculty. To achieve any significant increase in our number in Engineering, we need to hire and retain many more minority faculty over the next 10 years, not just one or two or five. Achieving this ambitious improvement in the representation of minorities in our faculty would necessitate our attracting a large percentage of the highly qualified minority Ph.D.s that the nation is currently producing to the MIT School of Engineering each year. Clearly, we face a significant challenge. One approach to this long-term issue is to increase the size of the pool of minority candidates by supporting academic excellence and retention throughout the academic "pipeline," that is, throughout the educational process starting at early stages.

So, how is the School of Engineering addressing the issues underlying these challenges?

First, I invite you to learn more about a variety of successful [pre-college programs](#) that the School has implemented to address these challenges:

- [MITES](#) – a rigorous six-week summer residential program for rising high school seniors around the country (including both underrepresented minorities and other underserved students since 2003) who are interested in studying and exploring careers in science, engineering, and entrepreneurship. On average, 40% of the program's graduates enroll at MIT and 80% pursue studies in engineering and the sciences. (Read [more](#) about this summer's MITES program.)
- Saturday Engineering, Enrichment, and Discovery ([SEED Academy](#)) – a 7-semester Saturday academic enrichment and career exploration program for Boston and Cambridge public high school students in grades 9 through 12 that teaches mathematics,

science, and communication skills using experiential learning techniques. (Read [more](#) about 2003-04 SEED.)

- Science, Technology, Engineering, and Math Institute ([STEM](#)) – a new five-week summer academic enrichment and mentoring program for high-achieving Boston public school students in grades 6 through 9. (Read [more](#) about this summer's new STEM program.)
- Women's Technology Program ([WTP](#)) – a 4-week residential summer program for high school juniors from around the country to explore topics in electrical engineering, computer science, and mathematics and engage in hands-on experiments. (Read [more](#) about this summer's WTP program.)

The aim of these outstanding pre-college initiatives is to contribute to a more robust and diverse engineering academic pipeline. They serve a diverse pool of middle school and high school students, including those from underrepresented and underserved segments, to equip them to enter and succeed in postsecondary engineering education and stay in the academic pipeline. These programs support MIT's and the School of Engineering's mission to provide all of our students with the intellectual stimulation of a diverse campus community and to serve the nation's need for a diverse pool of highly qualified engineers.

What about graduate students?

Turning to the end of the educational pipeline, I believe that increasing the number of minority graduate students is an important first step towards a more diverse faculty. I plan to convene a faculty committee in the coming academic year to study this issue and to suggest ideas concerning how we might do a better job of attracting and retaining more graduate students from underrepresented groups. Already, the School of Engineering and the MIT Provost's Office are spearheading a recruiting program called [CONVERGE](#), co-sponsored with the [Graduate Student Council's Diversity Initiative group](#). Scheduled for October 1-3, 2004, this invitational graduate preview weekend will involve college juniors and seniors who have excellent academic records and serious interest in research and who have the potential to increase the diversity of MIT's and the nation's engineering graduate students in support of the Institute's educational mission.

In addition to the above cited programs and efforts, the School of Engineering established an Office of Faculty Diversity Searches to assist our departments and divisions to conduct thorough searches for faculty candidates. Through this effort, the School attempts to identify highly qualified women and minorities who are not in the job market. We have also created a web site that features achievements of [faculty members](#) and significant School of Engineering diversity events. We have established mentoring and other programs to help women, minorities, and other underserved members of our community to feel fully part of our Engineering community and to succeed on our campus. Mentoring can make a difference.

What else is coming up?

On October 7-10, 2004, MIT will hold the 25th Anniversary Celebration of the Black Alumni/ae of MIT ([BAMIT](#)). The School of Engineering plans to support and participate in this milestone event in various ways. We welcome this opportunity to showcase the School's commitment to and recent successes in the diversity arena, particularly at the pre-college and undergraduate levels, and to garner input from a committed and invested audience.

I am also pleased to announce that the School of Engineering will be a sponsor of the annual conference of the National Society of Black Engineers ([NSBE](#)) to be held in Boston next March. NSBE's MIT chapter, one of the first, has been a source of mentoring, networking, and leadership training for engineering undergraduates since 1975, and I know that many members of our faculty have been advisors or mentors over the years. Through NSBE, many students have received the encouragement they need to pursue and succeed in advanced degree programs.

Continuing into the future

We've shown through our various initiatives that we can make significant progress in a short period of time using a variety of instruments. We can make a difference. I am proud of what we have achieved and of the fact that we are an open environment, providing opportunities for everyone. I am committed to continue to improve the education we offer to all of our students by increasing the School of Engineering's diversity. It's important that we sustain our commitment, for the good of MIT, for the good of engineering more broadly, and for the good of society.

[*] NOTE: 2006 update to cited figures – "Twenty-three women have joined our faculty in the past five years (with another woman scheduled to join the faculty next year), bringing the number of women faculty in the School of Engineering to 51 out of a total of 367 tenured and tenure-track faculty members in our nine academic departments and divisions."

[1] "Effects of Racial Diversity on Complex Thinking in College Students;" Anthony Lising Antonio, Mitchell J. Chang, Kenji Hakuta, David A. Kenny, Shana Levin, Jeffrey F. Milem; *Psychological Science*, August 2004, vol. 15, iss. 8, pp. 507-510(4) [Blackwell Publishing](#)

[2] *Engineering & Technology Enrollments*, Fall 2002, Engineering Workforce Commission of the American Society of Engineering Societies, Inc. 2003, p. 5 and MIT Registrar Enrollment Data, 2002-2003

[3] National Science Foundation [WebCASPAR database](#), NSF Survey of Earned Doctorates/Doctorate Records File, 2002 numbers.

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