

Broadening Participation in COSEE: Increasing Underrepresented Minority Undergraduate Students in STEM

DiOnetta Jones
Associate Dean for Undergraduate Education
Director, Office of Minority Education
Massachusetts Institute of Technology

COSEE Network Meeting
May 3, 2011

Why Broaden Participation?

- U.S. Bureau of Labor and Statistics reports that the labor market is projected to grow faster in science and engineering than in any other sector.
 - In 2006, underrepresented minorities, including African American, Hispanics/Latino Americans, and Native Americans constituted only 9% of the nation's science and engineering labor force, while accounting for nearly 30% of the population.
 - Non-U.S. Students (particularly from China and India) account for almost all of the growth in U.S. STEM doctorates awarded in the past 15 years, but many eventually return to their own countries, taking their talents with them.
 - At present, only 6% of all 24-year-old Americans hold an undergraduate degree in STEM disciplines, for URM's, the percentage hovers at 2 to 3%.



U.S. College Enrollment Predictions

- According to the Institute for Higher Education Policy (IHEP), between 2007 and 2018, it is predicted that college enrollment will increase:
 - 38 percent for students who are Hispanic
 - 32 percent for students who are American Indian or Alaska Native
 - 29 percent for students who are Asian or Pacific Islanders
 - 26 percent for students who are Black
 - 14 percent for international students
 - 4 percent for students who are White



A National Model for Success

MEYERHOFF SCHOLARS PROGRAM



Meyerhoff by the Numbers

Since 1993, the program has graduated over 700 students. As of February 2011, the program has achieved the following results:

- Alumni from the program have earned 81 Ph.D.s, 25 M.D./Ph.D.s, 92 M.D.s. Thirty-eight of the Ph.D.s have been awarded between 2005 and the first half of 2008.
- Over 85 additional alumni have earned graduate degrees in engineering, and nearly 300 alumni are currently enrolled in graduate and professional degree programs.
- An additional 230 students are currently enrolled in the program for the 2010–2011 academic year, of whom 51% are African American, 26% Caucasian, 18% Asian, 5% Hispanic, 1% Native American.
- The program is having a dramatically positive impact on the number of minority students succeeding in STEM fields; students were 5.3 times more likely to have graduated from or be currently attending a STEM Ph.D. or M.D./Ph.D. program than those students who were invited to join the program but declined and attended another university.

http://www.umbc.edu/meyerhoff/program_results.html

Meyerhoff - Lessons Learned

- **Recruitment and Selection**

- Comprehensive process (President, administrators, faculty, parents, and Meyerhoff alumni).
- **Special Note:** build alliances with K-12 schools/STEM programs; develop programs to attract 1st-year students; outreach is the key – go to them...don't wait for them to come to you.

- **Collaborative Classroom Learning**

- Emphasis on small group exchange/critical mass and group accountability

- **Undergraduate Research Opportunities**

- Participation of all students in undergraduate research beginning in their first year.
- **Special Note:** the NSF funds 25+ REUs that are Ocean Sciences-focused.

- **Faculty Engagement**

- Address the issues of faculty support and culture (i.e., this is not just a student issue).
- Engage faculty in recruiting and mentoring.

- **High Touch**

- Very intrusive and mandatory advising model; Meyerhoffs do not slip through the cracks.

- **High Expectations**

- Meyerhoffs know that they are exceptional and that the campus community supports them.
- Start with the End in Mind (Meyerhoffs are selected for the program with a PhD in mind).

- **Financial Aid and Merit Scholarships**

- Meyerhoff offers substantial extrinsic rewards in the form of scholarships.
- Reduce financial burden and pressures (students can focus on academics).

Recruitment is Important --RETENTION is Critical



OME

MIT OFFICE OF MINORITY EDUCATION

Our mission: To promote academic excellence, build strong communities, and develop professional mindsets among students of underrepresented minority groups, with the ultimate goal of developing leaders in the academy, industry, and society.

WHO WE ARE

- The OME introduces students to the complexities of MIT, assists them with challenging courses, and provides access to vital research, industry experience, and connections.
- The OME listens to students' ambitions and invites them to explore opportunities, serving as a crucial social nexus and source of guidance.
- The OME helps students achieve excellence in their work and balance in their lives, from matriculation to graduation.
- Through our programs and our community of scholarship and support, the OME equips students to thrive in this competitive environment and succeed in the world beyond.

Since 1975, the Office of Minority Education (OME) has existed, according to one student, as "a resource — a valuable resource — that was established to help minority students navigate this new landscape" known as MIT.

Matriculation to one of the world's top schools of science and engineering comes with inherent challenges of all kinds, and the OME works closely with students from underrepresented minority groups to ensure their academic success while building an essential community among undergraduates, faculty, and staff.

Through a multitude of academic, community building, and professional initiatives offered by the OME, students are empowered to thrive in a supportive setting that fosters both a pursuit of excellence and a strong sense of connection away from the comforts of home.

"Psychologically, the mere idea that there is an OME signals to minority students that MIT is making the effort to give all students a sense of belonging at the Institute. This is important," said Khalea Ross Robinson '11. "Beyond that, OME represents both an administrative resource and a link to one's racial or cultural origins — even as one explores the fascinating intellectual and other offerings available at the Institute."

"We need to make diversity work at MIT because it will make us better at what we do: broader and deeper as thinkers; more effective as collaborators; more creative as teachers; more understanding as friends; and wiser, less complacent and more self-aware as human beings," said MIT President Susan Hockfield. "When we listen only to people who agree with us, we cease to grow."

Our comprehensive range of programs and offerings are included on the back of this sheet and on our website.

[HTTP://WEB.MIT.EDU/OME](http://web.mit.edu/ome)



Office of Minority Education
Massachusetts Institute
of Technology
Office of the Dean for
Undergraduate Education
Building 4-113
77 Massachusetts Avenue
Cambridge, MA 02139-4307
617.253.5010
ome@mit.edu
<http://web.mit.edu/ome>
PSB 02-01-2005

Principles for Capacity-building in COSEE

Design Principles to Expand Higher Education Capacity

Principle

- Institutional leadership
- Targeted recruitment
- Engaged faculty
- Personal attention
- Peer support
- Enriched research experience
- Bridging to the next level
- Continuous evaluation

Evidence

Commitment to inclusiveness across the campus community

Investing in and executing a feeder system, K-12

Developing student talent as a rewarded faculty outcome

Addressing, through mentoring and tutoring, the learning needs of each student

Student interaction opportunities that build support across cohorts and allegiance to institution, discipline and profession

Beyond-the-classroom hands-on opportunities and summer internships that connect to the world of work

Institutional relationships that help students and faculty to envision pathways to milestones and career development

Ongoing monitoring of process and outcomes that guide program adjustments to heighten impact

source: *A Bridge for All*, www.bestworkforce.org, 2004

