Office of Engineering Outreach Programs

The Office of Engineering Outreach Programs (OEOP) in the School of Engineering runs academic enrichment programs for over 400 middle and high school students locally and nationally. The programs are offered free of charge and focus on exposing students to engaging and challenging curricula in engineering and science. OEOP's goal is to provide traditionally underserved students with multiple entry points to academic and professional careers in the science, technology, engineering, and mathematics (STEM) disciplines.

OEOP's core programs—Minority Introduction to Engineering and Science (MITES), Saturday Engineering Enrichment and Discovery (SEED) Academy, STEM, MIT Science of Baseball Program (MSBP), Confronting Obstacles and Realizing Excellence (CORE)—also support MIT's mission to sponsor K–12 programs that foster unique learning experiences for students and help build a pipeline of diverse and highly qualified scientists and engineers. In summer 2011, OEOP will launch its newest program, Engineering Experience at MIT (E2@MIT), to serve 60–70 more students from the MITES applicant pool through a one-week residential enrichment program.

Raising over 80–90% of its funding, OEOP makes significant efforts to maintain its financial resources and support. In close cooperation with the dean of engineering and MIT development officers, OEOP secures funding for its programs from a broad range of corporations, foundations, MIT alumni, OEOP alumni, and other individuals.

The following are some of OEOP's most notable achievements and highlights for AY2011:

- The national outreach program E2@MIT will launch for 64 talented high school seniors.
- 74% of students who applied to MIT from the 2010 MITES program were accepted.
- 100% of students who graduated from the 2011 SEED Academy were accepted to college.
- In fall 2010, the third SEED Academy student was admitted to MIT.
- Thirteen high school students successfully completed the 2010 CORE program, a 90% increase in enrollment over the 2009 program.
- In 2010, over 125 middle school students participated in the STEM and MSBP programs.
- In 2010, four MSBP alumni applied and were admitted to the STEM program. All four successfully completed the STEM Summer Institute, earning high marks from their instructors.
- Eleven students from OEOP's middle school programs (STEM and MSBP) were accepted to the 2011 spring session of SEED Academy.

- Nine STEM and MSBP alumni participated in the second year of the ninth grade cohort program, which helps students make a successful transition to high school.

High School Programs

Minority Introduction to Engineering and Science

MITES participants take courses in calculus, physics, and life science (chemistry, biology, or biochemistry); a writing-intensive humanities course; and a project-based course (genomics at the Broad Institute, digital design, engineering design, electronics, or architecture). In 2011, MITES selected 80 high school seniors from a pool of over 1,500 applicants to participate in its rigorous six-week summer session. The selected students came from 24 states, including Puerto Rico. Of the 71 students who attended MITES in 2010, 68 applied to MIT, 49 (72%) were accepted, and 32 (65% of the 49) will attend MIT as members of the class of 2015. MITES students who attend MIT are consistently strong academic performers within their cohorts, graduating at a rate 12 percentage points higher than that of other minority students at the Institute.

Engineering Experience at MIT, Pilot Summer 2011

In order to serve more students from the growing MITES applicant pool, OEOP will provide 64 promising high school seniors with its new one-week, residential, summer enrichment program, E2@MIT. Students from the MITES applicant pool with high academic potential and a strong interest in science and engineering were selected to participate in the program the summer before their senior year in high school. During E2@MIT, students will complete a short project course in an engineering field, while attending admissions and financial aid sessions; touring labs; meeting MIT faculty, students, and alumni; and participating in social events. In 2011, the engineering courses will focus on aerospace engineering, mechanical engineering, electronic, genomics, and computer science.

Saturday Engineering Enrichment and Discovery Academy

The SEED Academy, an academic enrichment and technical career exploration program for Boston, Cambridge, and Lawrence public high school students, recently completed its ninth year. The seven-semester program is designed to strengthen participants' fundamental mathematics, science, and communication skills using an original, hands-on curriculum. In 2011, the SEED Academy graduating class of 22 students was accepted to a number of prestigious universities, including MIT, Columbia University, Boston University, Boston College, and the University of Massachusetts–Amherst.

Confronting Obstacles and Realizing Excellence

CORE is a two-week summer program focused on increasing the quantitative reasoning skills of Boston area high school students. The premise for CORE is that all students can excel in math and scientific reasoning if they are provided with a fundamental core of mathematical knowledge. CORE consists of an intensive mathematics course covering basic computation, conversion and transformation, estimation and approximation,

ratios and proportions, unit analysis, and variable manipulation and equalities. In 2010, thirteen high school students successfully completed the CORE program.

Middle School Programs

Science, Technology, Engineering, and Math

The STEM program is a non-residential, year-round academic enrichment and mentoring program for local public school students in grades six through nine. STEM consists of three components: a five-week summer academic phase on the MIT campus to prepare students for "gateway" high school math and science courses, an academic-year mentoring program that pairs each STEM participant with an MIT student, and workshops to empower STEM parents to advocate for and equip their children for academic success. In 2010, 89 students from Boston, Cambridge, and Lawrence public schools completed the summer academic phase. All of these students were invited to participate in the OEOP Middle School Mentoring Program along with students who participated in MSBP. The mentoring program supported 66 students from STEM and MSBP during AY2011.

MIT Science of Baseball Program

For five summers, MSBP has provided over one hundred eighth-grade boys from Boston and Cambridge public schools with an innovative four-week summer enrichment program. The program is geared toward underserved youth who may not be achieving high marks in math and science but are interested in baseball and thus demonstrate potential to benefit from a program combining math and science lessons with baseball skills. MSBP integrates an experiential curriculum with academic topics. Throughout the program, students work on their baseball skills as they develop an understanding of the mathematics, science, and culture behind the sport and synthesize all of these elements into the strategy of the game through the study of statistics and probability. Last year, the twenty-eight boys who completed the 2010 session of the program were also invited to participate in the Middle School Mentoring Program during the academic year.

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