Office of Engineering Outreach Programs

The Office of Engineering Outreach Programs (OEOP) in the School of Engineering runs academic enrichment programs that reach over 500 middle and high school students locally and nationally. These 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—the Minority Introduction to Engineering and Science (MITES) program; the Engineering Experience at MIT (E2@MIT) program; the MIT Online Science, Technology, and Engineering Community (MOSTEC); the Saturday Engineering Enrichment and Discovery (SEED) Academy; the STEM Program; the MIT Science of Baseball Program (MSBP); and the Confronting Obstacles and Realizing Excellence (CORE) program—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.

Raising between 80% and 90% of its own funds, 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.

OEOP is in the process of moving two programs—Confronting Obstacles and Realizing Excellence and the MIT Science of Baseball Program—to other MIT departments. After two years of strategic planning, OEOP identified that it best serves students who are high academic achievers and who already have an interest in STEM. These two programs, CORE and MSBP, served students with moderate achievement and only some interest in STEM. With this in mind, OEOP sought organizations that could build upon the success of these two programs. The MIT Museum will now be running MSBP and MIT Lincoln Laboratory will be running CORE, and both plan to expand these programs to reach more students. During this time of transition, OEOP will assist the MIT Museum and MIT Lincoln Laboratories as they run the programs this summer.

Highlights

Number of students served since 2007:

	2013	2012	2011	2010	2009	2008	2007
ACES			20	12			
E2@MIT	75	76	64				
MOSTEC	88	105	80				
CORE	20	20	20	14	7	15	
MSBP	30	30	30	26	22	27	24
STEM	90	87	93	89	78	84	80
MITES	78	78	80	71	70	66	64
SEED	90	92	100	92	93	94	85
Total	**471**	**488**	**479**	**300**	**280**	**276**	**253**

Notable achievements from AY2014:

- 73 students who applied to MIT from the 2013 MITES, MOSTEC, and E2@MIT programs were accepted.
- All the students who graduated from the AY2014 SEED Academy were accepted to college.
- In fall 2013, the sixth SEED Academy student was admitted to MIT.

High School Programs

Minority Introduction to Engineering and Science Program

Minority Introduction to Engineering and Science 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 2014, the MITES Program selected 80 high school seniors from a pool of over 1,600 applicants to participate in its rigorous six-week summer session. The selected students come from 27 states and Puerto Rico. Thirteen of these students have already been admitted to MIT through the early action process, and 36% of students who participated in the MITES in the previous class are currently freshmen at MIT. Others are pursuing studies at prestigious institutions such as Harvard, Stanford, Princeton, and Yale. MITES students who attend MIT are also 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 Program

In order to serve more students from the growing MITES applicant pool, in 2013 the Engineering Experience at MIT (E2@MIT) hosted 75 promising high school seniors at a one-week, residential summer enrichment program. 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 completed a short project course in an engineering field while attending admissions and financial aid sessions, touring laboratories, participating in social events, and meeting MIT faculty, students, and alumni.

MIT Online Science, Technology, and Engineering Collaboration

In 2013, the MIT Online Science, Technology, and Engineering Community program provided a group of 85 promising high school seniors with an enriching online experience that extended from the fall into the spring as they submitted their college applications. Via this online community, students were exposed to MIT's faculty and staff, provided with admissions and financial aid tips, and facilitated discussions about science and engineering research. By being part of MOSTEC, students also shared their own research, and were offered mentorship opportunities. At the MOSTEC conference, 85 students gave presentations on their summer projects and received feedback from their instructors, took engineering workshops, toured lab and industry facilities, attended a college admissions panel, toured the MIT campus, participated in social events, and met MIT faculty, researchers, staff, and students.

Saturday Engineering Enrichment and Discovery Academy

The Saturday Engineering Enrichment and Discovery Academy (SEED) Academy, an academic enrichment and technical career exploration program for Boston, Cambridge, and Lawrence public high school students, recently completed its 12th year. The seven-semester program is designed to strengthen participants' fundamental mathematics, science, and communication skills using an original, hands-on curriculum. In AY2014, all 22 members of the SEED Academy graduating class were accepted to a number of prestigious universities, including MIT, Dartmouth College, Centre College, Harvard College, Boston College, Stanford University, American University, Bryn Mawr College, Northeastern University, and the University of Massachusetts at Lowell, Boston, and Dartmouth.

Confronting Obstacles and Realizing Excellence Program

The Confronting Obstacles and Realizing Excellence (CORE) program is a two-week summer program focused on increasing the quantitative reasoning skills of Boston-area middle and high school students. The premise for CORE is that all students can excel in mathematic and scientific reasoning if they are provided with a fundamental core of mathematical knowledge. The CORE program consists of an intensive mathematics course covering these major topics: basic computation, conversion and transformation, estimation and approximation, ratios and proportions, unit analysis, and variable manipulation and equalities.

OEOP is in the process of transitioning the CORE program to MIT Lincoln Laboratories. During this time of transition, OEOP will assist Lincoln Laboratories as they prepare to run the program next summer.

Middle School Programs

Science Technology Engineering and Math Program

The Science Technology Engineering and Math (STEM) Program is a non-residential, year-round academic enrichment and mentoring program for local public school students entering grades six through nine. STEM consists of two components: a five-week summer academic institute on the MIT campus to expose students to advanced

mathematics and science courses, and an academic-year mentoring program that pairs each STEM participant with an undergraduate or graduate student to encourage their interest in pursuing technical careers. In 2013, 85 students from Boston, Cambridge, and Lawrence public schools completed the summer academic institute. All of these students were invited to participate in the OEOP middle school mentoring program along with students who participated in MSBP and CORE. The mentoring program supported 58 students from STEM, MSBP, and CORE during AY2014.

MIT Science of Baseball Program

Over the course of seven summers, the MIT Science of Baseball Program (MSBP) has provided almost 200 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 mathematics and science, but are interested in baseball and thus demonstrate potential to benefit from a program combining mathematics 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.

OEOP is in the process of transitioning MSBP to the MIT Museum. During this time of transition, OEOP will assist the MIT Museum as they prepare to run the programs next summer.

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