

MIT Introduction to Technology, Engineering, and Science

The [MIT Introduction to Technology, Engineering, and Science \(MITES\)](#) program continues to pursue our longstanding goal to diversify the science and engineering community by empowering students from underrepresented and underserved backgrounds to develop the skills and confidence needed to pursue careers in technical fields. In addition, MITES aims to:

- Attract students from across the country to MITES's programs
- Increase the number of students we serve annually, and
- Continue to assess the effectiveness of our programmatic activities

Programmatic Accomplishments

Organizational Rebrand

In fall 2022 we introduced our organizational rebrand. The Office of Engineering Outreach Programs (OEOP) is now MITES, which has a new expanded meaning: MIT Introduction to Technology, Engineering and Science. Our mission and vision are the same, but our programs have new names. MIT Online Science, Technology, and Engineering Community (MOSTEC) is MITES Semester, MITES is MITES Summer, and SEED Academy is MITES Saturdays.

Student Demographic Data

During AY23, we served 404 students between the MITES Semester and MITES Saturdays programs. We did not offer MITES Summer due to the pandemic. MITES received approximately 2,372 applications for the MITES Semester program, admitted 297, and enrolled 284 scholars.

MITES scholars are diverse: 51 % are female or non-binary, 75% are from backgrounds under-represented in STEM, 50% are low-income, 48% are the first in their families to attend college, and they represented 32 states, Puerto Rico, and Tokyo. The MITES program brand places a unique emphasis on a positive educational environment that cultivates strong ties between teachers and students, and a community of supportive peers. This model creates a sense of belonging amongst students, while building self-confidence in their STEM abilities, both of which are critical to our students' success.

Impact

Our alumni include entrepreneurs, physicians, CTOs, research directors, data scientists, professors, and more. They've gone on to become early employees of Dropbox and Facebook, authors of popular math and science books, a Vice President at Microsoft, Gates Millennium scholars, and NSF Graduate Research fellows.

MITES Semester

(formerly MIT Online Science Technology and Engineering Community, or MOSTEC):
June 22, 2022 – December 11, 2022

Due to Covid-19 we merged our 2022 MITES Summer (formerly Minority Introduction to Engineering and Science or MITES) program with MITES Semester. We received approximately 2,372 MITES Semester applications, admitted 297, and enrolled 284, our largest MITES Semester cohort ever. Students hailed from 32 states, Tokyo, and Puerto Rico.

During MITES Semester's first five weeks, students completed two online courses and collaborated virtually to create a project. Courses included, Neuroscience, Thermodynamics & Climate Change, Robotics, and Electronic Circuit Design. In August we produced our third virtual Final Symposium. Held August 3rd-4th, the event's theme was *Boundless Together*, showcasing the importance and impact of strong collaborations. Students presented their projects, and participated in a MITES Semester alumni panel event. Approximately 835 attended, including MITES Semester students, family members, and staff. Students also attended a virtual college fair where 40 colleges exhibited.

August through December, students participated in the on-line enrichment programming via webinars, meetings, and group chats. Meetups focused on STEM learning, and offered in-depth advice and coaching on the financial aid, scholarship and college application processes. The enrichment phase culminated with a virtual final webinar on 12/11/22, attended virtually by 240.

MITES Saturdays

MIT Introduction to Technology, Engineering, and Science Saturdays Program (formerly SEED Academy): *September 24, 2022 – May 6, 2023*

We launched fall 2022 MITES Saturdays in-person with 87 students. The semester launch had a celebratory feel, as it was the first time MITES Saturdays was held on campus since 2021. Returning students were excited to reconnect and gather together in person. Parents noticed the joy generated by gathering together after the scarcity of social opportunities due to the pandemic. We held our opening day at Launch Trampoline, an indoor recreational facility.

Fall MITES Saturdays students met for eight Saturdays beginning September 24th, culminating with the in-person Final Symposium held on December 3rd at the MIT Student Center. Students shared their final projects with each other, family, and community members during the Symposium, which was attended by approximately 250 students, instructors, and community members.

Spring MITES Saturdays launched in-person on February 25, 2023, with 127 scholars. Students met on campus for eight Saturdays. MITES relaunched the homework club, which was very highly attended. Participants received one-on-one homework assistance from their Teaching Assistants prior to scheduled sessions. We also partnered with Cambridge Coaching, who offered participants additional tutoring.

The final symposium held on May 6th, with the theme *Together We Rise*, attended by a total of 300 students, and family/community members. In addition to hearing presentations on final projects, participants attended student awards ceremonies, and heard comments by keynote speaker, Guadalupe Hayes-Mota (MIT, '08, BS, Chemistry, Spanish Literature, Georgetown University, '09, MPP, Healthcare Policy, MIT, '16, MS Engineering Systems, MIT, '16 MBA, Entrepreneurship and Operations). Founder

and CEO of Healr Solutions, who emphasized the importance of soft skills such as collaboration, community and mentors.

Fall 2022 MITES Saturdays Curriculum

Grade	Graduating class	Course Title
8th	2027	Computational Biology
9th	2026	Mechanical Engineering
10th	2025	Computer Science
11th	2024	Data Visualization
12th	2023	Engineering Design

Spring MITES Saturdays Curriculum

Grade	Graduating class	Course Title
7th	2028	Engineering Design
8th	2027	Environmental Engineering
9th	2026	Architecture and Urban Planning
10th	2025	Robotics
11th	2024	Biological Engineering
12th	2023	Engineering Design

Curriculum Shifts

During the last three years, we added computer science, physics, and calculus to MITES Semester's core curriculum, to accommodate the increased demand for these courses.

We hired additional instructional staff and expanded the hours/job responsibilities of our Curriculum Instructional Support Specialist (CISS). Her expertise was in such demand by instructional staff, we created a second CISS position. These Specialists meet weekly with new instructors, those new to virtual and in-person instruction, and those looking to enhance virtual/in-person classrooms skills. They provide input into lesson plans, observe classes and offer feedback.

Expanded Student Success and Wellbeing Supports

Hired in August '22, our Student Success and Wellbeing Administrator Sara Colon was able to bolster and refine her supports. She advised instructors about navigating scholars' social-emotional challenges, while communicating to them in a supportive manner that holds them accountable, and encompasses MITES' core values, which emphasize individual students' growth/change. Ms. Colon offered informational sessions to the 11th graders about financial aid, including the Posse Scholarships, and shared this information with their parents as well. Several MITES scholars expressed interest, and we nominated them for the Posse Scholarship.

Evaluation

In addition to increased STEM skills, our alumni graduate with highly developed critical social skills including increased self-confidence, ability to self-advocate, and expanded capacities to navigate the college application process.

Based on students' assessments and feedback MITES scholars achieved the following:

- Expanded understanding of STEM fields and increased levels of interest in the STEM curriculum
- Greater understanding of the college application process, resulting in higher expectations for admittance, and more applications per student to a wider array of colleges
- Enhanced interest in majoring in technical fields, and pursuing STEM careers
Increased interest in pursuing STEM careers

Just as telling of MITES's success is students' feedback, including the following comments from our 2022 Scholars:

MITES Saturdays helped me learn that everybody can have a place in STEM, and STEM can be really fun and collaborative. I hope to major in STEM in the future, so MITES Saturdays has been a great launchpad.... When I was younger, I really looked forward to seeing the older kids' projects. Now I'm passing that on, so I hope that the younger kids can see our projects this year and get inspired and excited about their future years at MITES Saturdays.

Karen Garcia, Lawrence, MA, MITES Saturdays '22, Yale '26

MITES Semester provided a way for me to learn outside of the classroom. My family is all Cuban immigrants. My parents moved to America at a very late age and were not aware of the educational opportunities available. MITES Semester taught me about the opportunities my family was unaware of, and has also provided me financial aid tips, job tips, interview tips, essay tips, school help, and a comfortable place to relax. MITES's academic phase helped me build my resume and skills, and also taught me the values of collaboration, which I had lost when my school was forced to move to online during Covid-19. The journey to college was much easier for me thanks to MITES.

Eric Gonzalez, Miami, FL, MITES Semester '22, MIT '27

After college, MITES alumni become trailblazers in STEM and beyond. Our alumni include entrepreneurs, physicians, Chief Executive Officers, Chief Technology Officers, research directors, data scientists, professors, and more. Below are links to MITES alumni whose accomplishments/stories were featured in the media:

- Aaron Ashley, MITES Summer, 2011, MIT, 2016, Bachelor's Aerospace Engineering; University of Colorado, '18, Master's Bioastronautics, Aerospace Engineering. Mr. Ashley was a Systems Engineering intern at Raytheon Corporation while pursuing his Master's Degree. Upon completion of his Master's, Raytheon offered him a System Safety Engineer position, which he still holds. Mr. Ashley's efforts to relaunch MIT's student chapter of the American Indian Science and Engineering Society (AISES) were recently featured in MIT's Alumni Life newsletter. The AISES relaunch is the outgrowth of years of community building that began when Mr. Ashley was an undergraduate at MIT. <https://alum.mit.edu/slice/rocket-launch-indigenous-alumni-group>.

- Destiny Ojukwu, MITES Semester, 2022, College TBD Ms. Ojukwu received the MASS Award of Academic Excellence in November. Recipients' GPA's must be in the top fifth percentile of their class, and nominees must demonstrate leadership traits, respect for peers, and involvement in the school. Her teachers describe her as leader and mentor. She serves as a Peer Counselor and during the opening school year ceremonies, she served on a student panel where she represented peers and offered advice to faculty and staff about how they can support students, specifically those from diverse backgrounds. <https://jgpr.net/2022/11/28/medway-high-school-senior-destiny-ojukwu-recognized-by-massachusetts-association-of-school-superintendents-for-academic-excellence/>

Recruitment

Aligned with the MITES's mission to diversify the STEM community, we place special emphasis on recruiting students from underserved and underrepresented backgrounds. In an effort to increase our MITES Semester participants' geographic diversity and improve our national visibility, we have increased outreach efforts to areas beyond Massachusetts. This year we traveled to Detroit where our Director of Recruitment and Admissions met with staff from seven schools, and a total of 185 students as well as some community-based organizations. As a result, the number of Detroit-based applicants we received increased. Although we didn't travel to these places, our outreach efforts to Worcester, MA, South Carolina, Ohio, and Indiana resulted in increased applicants from these regions this year as well.

With the creation of the Recruitment and Admissions Associate Director position, MITES has been able to focus on operational infrastructure related to recruitment, including streamlining the national programs' application process, updating recruitment contacts, developing a data-driven 2024 recruitment strategy, and updating applicant inquiry protocols. The Recruitment and Admissions, Associate Director also offered application and essay support to MITES applicants and teachers via phone calls.

The pivot to all-virtual during the pandemic resulted in a 21% increase in total number of students served annually. This expansion required staff reorganization, enabling MITES to accommodate the student increase while providing excellent hands-on STEM education programming.

Due to Covid-19, we had to adapt to health regulations – federal, city, and MIT's – to ensure students' health/safety during the pandemic. Thus, MITES Saturdays underwent a "yo-yo effect," as we shifted from in-person to virtual twice between 2020-2022. In fall 2021 we re-launched our recruitment efforts, aiming to reach pre-pandemic enrollment (~130 students). Recruitment activities were largely remote, including mailings/emails to schools, phone calls to staff, and virtual meetings. Despite these challenges, we received 65 applications, and admitted 41.

Partnerships

Research, Educator and Business Leaders Network (REBLs): Eboney Hearn, ED, sits on the Steering Committee of University of Massachusetts' Institute of Diversity Sciences' (IDS) 's REBLs network and facilitates a smaller working group of state-wide

educators and corporate sponsors focused on access to computer science education for Massachusetts K-12 students. This working group was established when IDS received a \$500,000 grant from the National Science Foundation to lead a STEM diversification network that brings leaders from all sectors together from across Massachusetts to break down racial barriers to STEM careers, and build a multi-institutional partnership.

Hopper Dean Foundation Convening (HDFC): MITES was awarded a multi-year grant from to support computer science education in all MITES programs. As a result, Eboney Hearn participates in a monthly convening of all award recipients including leaders from UC Berkeley, University of Washington, Howard University, Georgia Tech, Cornell, and Carnegie Mellon. This group is creating a guidebook of best practices in broadening participation in computer science from K-12 all the way through the professoriate.

Improving DEI: MITES is consulting with Outward Bound, a local nonprofit that provides organizational professional development programming. The goals of this collaboration are increasing newly-forming and high-performance teams' effectiveness, cultivating a positive, inclusive, supportive, and empowering culture, and forming more trusting relationships among colleagues.

Outward Bound hosted the entire MITES team at Thompson Island for a day of team-building active learning exercises that were physically and intellectually challenging. The day stimulated participants' creative collaborative problem-solving abilities and highlighted our different communication and leadership styles. MITES is currently consulting with Outward Bound to promote inclusive practices in the work setting and incorporating these enhanced skills along with teamwork into program implementation, and professional best practices.

Finances and Funding

MITES secures nearly 60% of our budget from sources outside of MIT to meet our commitment of offering our transformative programs free-of-charge. The remainder comes from MIT and fundraised endowed income. We fundraise approximately \$1.5M/year. Over the last four years, funding needs have grown in size and scope. We work with MITES's Advisory Group, MIT's School of Engineering Dean, MIT's central Development office and SoE staff to solicit funds from individuals, foundations, and corporations. In spring'21, we secured a generous gift, to hire a new fully-dedicated Fundraising and Alumni Relations Officer. We share the cost of this three-year position with SoE. We also benefit from the talents of a dedicated part-time Grant Writer.

Specific fundraising sustainability measures include:

- Improving giving to MITES endowed funds by identifying, cultivating, soliciting, and stewarding major gifts donors, with support of MIT's SoE and Central Resource and Development's staffs. Endowments have grown by \$4M+ since 2017.
- Monitoring spending closely and identifying opportunities for cost sharing with other MIT departments to help build a reserve, in case fundraising is impacted.
- Catalyzing participation of our program alumni/friends during MIT giving day challenges, resulting in increased annual donors. We went from 345 donors in FY18 to over 450 donors in FY22, a 33% increase.

- Educating MIT faculty, alumni, and staff on MITES programs to attract volunteers, scientific instructional staff, grant partners, donors, and mentors.
- Facilitating corporate networking events, attended by MITES corporate sponsors and recent MITES alumni to deepen collaborations, alumni career opportunities, and sponsorship.
- Obtaining a donor grant to launch a corporate outreach campaign, to increase corporate gifts. We intend to make 12 new corporate contacts this year.
- Participating in MIT's annual 24-Hour Challenge day. This year, MITES raised a total of \$59,131 from 334 donors, including an anonymous \$30,000 matching gift.

MITES received additional grant funding from the following foundations and corporations:

- 3M
- 484 Phi Alpha Foundation
- Apple Matching Gifts Program
- Bank of America Charitable Gift Fund
- Boeing
- The Boston Foundation
- Cadence Design Systems
- Capital One
- Carina Fund
- Charles Hayden Foundation
- Conrad Hilton Foundation
- Dorothy Lemelson Trust
- Edward and Linda Dresner-Levy Fndn.
- Exxon Mobile Foundation
- Fidelity Foundation
- Fidelity Charitable Gift Fund
- Google Foundation
- Hewlett Packard Company
- H&R Block Foundation
- Hopper Dean Foundation
- Impact Fund
- Intel Foundation
- Johnson Family Foundation
- Lloyd G. Balfour Foundation
- Linde Family Foundation
- Lockheed Martin Corporation
- Marathon Oil Company Foundation
- Microsoft Corporation
- Michael and Susan Dell Foundation
- Morgan Stanley Global Impact Funding
- Nellie Mae Foundation
- PayPal
- P&C Fund for Charitable Giving
- Schwab Fund for Charitable Giving
- Scratch Foundation
- Shell Oil Company Foundation
- Texas Instruments Fund
- United Health Foundation
- Visa International
- Wal-Mart Foundation
- Workday

Personnel Appointments and Departures

Appointments

Gabrielle Ballard, MITES Summer Program Coordinator: Gabrielle Ballard joined MITES in July 2019 as a program assistant for the national programs. In June 2022, Gabby transitioned to their current position as Program Coordinator where they organize the day-to-day operations necessary to implement the MITES Summer program. Prior to joining the MITES team, Gabby was studying for her B.S. in Engineering and Humanities at Massachusetts Institute of Technology, where she concentrated her studies in Anthropology, Computer Science, and Education. They also trained as a healthy relationship and relationship empowerment educator and worked in the Admissions Office and Women & Gender Studies Office.

Michelle Chouinard, MITES Saturdays Program Coordinator: Michelle worked as MITES Saturdays Program Assistant After working as a temporary beginning in February 2022. In August 2022, Michelle joined MITES as a MITES Saturdays Program Coordinator. Michelle organizes the daily operations and ensures efficient program logistics for MITES Saturdays. Michelle is passionate about human rights and education and enjoys providing logistical support to inspiring programs like MITES Saturdays. Michelle holds a BA in Anthropology and Gender Studies from the University of Massachusetts, Boston, and an MA in Human Rights Studies from Columbia University.

Sara Colon, Success and Wellbeing Administrator: Sara Colon joined MITES in August 2022. Ms. Colon works closely with program staff to foster an inclusive and supportive environment for all students and provide key skills and tools for their academic success in our rigorous programs and beyond. She addresses student concerns by consulting with staff, creating programming, and meeting individually with participants and recent alumni on personal and academic issues, to provide advice and referrals for additional appropriate services including for mental health/wellbeing needs. Prior to joining MITES, Sara served as Director of College Completion for Roxbury Prep High School

Lauchlin Cruickshanks, MITES Semester, Program Administrator: Lauchlin Cruickshanks joined MITES in July 2022. Mr. Cruickshanks is responsible for the planning and implementation of MITES Semester, with the goal of delivering an engaging and rewarding scholarly experience. Prior to joining MITES, Mr. Cruickshanks taught high school chemistry in the San Francisco Bay area, for over two decades.

Reimi Hicks, Associate Director of Recruitment and Admissions: Reimi Hicks joined MITES in 2015 as the MITES Summer Program Coordinator for the MITES. She also served as MITES Manager of Programs between 2017 and 2023, when she was promoted to her current role, Associate Director, Recruitment and Admissions. Reimi is leading the organization's efforts to attract and admit talented and passionate scholars and staff from across the country. Through managing relationships with internal and external partners, Reimi works to build greater awareness of the MITES mission and increase access to MITES programming.

Marcus Mundy, MITES Summer Program Administrator: Marcus Mundy joined MITES in July 2022. As the Program Administrator, he is responsible for the planning and execution of the MITES Summer program. including logistics planning and

implementation, training, and MITES Summer staff management. He also focuses on the curriculum and instruction, extracurricular activities, and the students' overall well-being. Marcus began his professional career as a Spanish and French teacher at the elementary, middle, and high school levels. During his time in K-12, he developed and taught new classes, coached Academic Bowl, and founded an Anime Club. Marcus holds a BA in Spanish Language and Culture with an extensive minor in French Language and Culture from Valdosta State University.

Departures

Dora Gonzalez Rodriguez, Communications Administrator (Departed April 2023)

Eboney Hearn
Executive Director

