

## **MIT–Singapore University of Technology and Design Collaboration**

The collaboration between MIT and the Singapore University of Technology and Design (SUTD) builds on more than a decade of MIT education and research activities in Singapore. It is the largest and most complex university capacity-building endeavor in MIT's history. Founded in 2009 through a partnership between MIT and Singapore's government, the MIT–SUTD Collaboration was established to promote a better exchange of information between MIT and SUTD. This collaboration is multifaceted and has included the development and offering of curriculum, establishment of the major co-located research center, and recruitment and professional development of SUTD's university leadership team and faculty. This year was significant in that it marked the end of the seven-year education component of the collaboration agreement. The research component of the agreement continues through June 30, 2020.

### **Education Activities**

The sixth cohort of students at the Singapore University of Technology and Design (SUTD) began their three-and-a-half-year journey on May 9, 2017. Of the approximately 439 students, 37% were female, a percentage similar to that of last year's cohort, although not as high as in previous years. The decrease of 28 matriculated students from the 2016 to the 2017 cohort was attributable to several factors. These include overall shrinking population in Singapore (8% fewer students sat for the A level exams in 2016), lowering admission criteria from other top universities in Singapore leading to more students being admitted at other top universities, as well as increased competition from the National University of Singapore and Nanyang Technological University, which have offered programs similar to those at SUTD. SUTD has noted an increase in the marketing of hands-on pedagogical approaches at competing universities. Recruitment remains an important priority for SUTD.

Faculty and lecturers at SUTD now number 152, of which 110 are either tenured or on a tenure track. Several important senior faculty hires were accomplished in the past year, including a replacement for the head for the Engineering and Systems Design (ESD) pillar, a replacement for head of pillar for Architecture and Sustainable Design (ASD), and a new cluster head for Humanities, Arts, and Social Sciences (HASS).

The initial phase of the education component of the collaboration agreement is now winding down. After several rounds of contract negotiations, MIT and SUTD did not agree on terms for a new education contract, and SUTD opted to discontinue negotiations in April 2017. At the close of the education component, all contract deliverables for which MIT was responsible were met or exceeded, as outlined in the following table:

**Table 1. List of Programs, Deliverables, and Outcomes**

<b>Activity/Program</b>	<b>Contract Expectation</b>	<b>Delivered</b>	<b>Met or Exceeded</b>
Course Development	87 required	96 (90% of undergrad curriculum)	Exceeded
Cluster Residencies	15 required semesters	15 completed August 2016	Met
Co-teaching Residencies	40 two-week residencies; 40 four-week residencies	49 two-week completed; 46 four-week completed	Exceeded
Faculty Development	Up to 70	42 completed	Met
Joint Postdocs	Up to 50	50 completed or in progress	Met
Dual Masters	Up to 125	41 either completed or currently enrolled	Met
Graduate Fellows Program	Paid for and limited by interest on the MIT Endowment	57 total: 24 graduate students, 4 one-year postdocs; 18 two-year postdocs; 14 research associates	

In addition, MIT offered several successful programs not included in the contract, which supported SUTD’s recruitment efforts, student life programming, and curriculum. These additional programs are listed below:

#### Global Leadership Program (GLP)

- 2013: 28 SUTD students
- 2014: 30 SUTD students
- 2015: 30 SUTD and 5 MIT students
- 2016: 34 SUTD and 10 MIT students
- 2017: 12 SUTD and 6 MIT students

#### SUTD Winter Abroad Program (SWAP)

- 2015: 40 SUTD students
- 2016: 60 SUTD students
- 2017: 56 SUTD students

## LEAD Program

- 2012: 17 MIT students
- 2013: 17 MIT students
- 2014: 20 MIT students
- 2015: 23 MIT students
- 2016: 30 MIT students

Additionally, there have been 58 MIT faculty reviews of new course proposals developed by SUTD faculty to date (ongoing).

Despite the wind-down, this seventh and final year of education activities saw an ongoing productive relationship between the universities with most programs still running.

## Co-Teaching Residencies

Although co-teaching residency requirements were fulfilled as of Summer 2016, one additional 8-week residency occurred in Fall 2016, and one additional two-week residency occurred in Spring 2017. Required pillar head residencies were also completed as of the end of Summer 2016.

## Faculty Development Program

Seven additional SUTD faculty participated in the MIT-SUTD Faculty Development (Teach-the-Teacher) Program this year, with four in the fall semester and three in the spring. Faculty in this program were in residence at MIT for six months and received mentorship from MIT faculty in their fields. They took a course on teaching methods, organized seminars with invited speakers from various MIT academic programs and administrative offices, carried out research, and in some cases audited courses here, with the goal of learning about MIT's unique academic culture. This program has helped expose many SUTD faculty to MIT, fostered research collaborations across the universities, and improved the overall quality of instruction at SUTD.

## Joint Postdoctoral Fellowship Program

Given the winding down of the education component, no new postdoctoral fellows were recruited this year. However, 14 postdocs remain in the program. Eight of these will begin their year at MIT in fall 2017 or early winter 2018, while the remainder will finish their fellowships at SUTD. The collaboration office will continue to provide administrative support for this program through February 28, 2018.

## Dual Masters Program

The final group of six dual masters students entered MIT in fall 2016 and will begin their year at SUTD in fall 2017.

### **Graduate Fellows Program**

The graduate fellows program remained active throughout the 2016–2017 academic year. The final five graduate fellows completed their fellowships in summer 2017. This program provided key support to SUTD’s teaching staff. The graduate fellows served as teaching assistants and in some cases as lead instructors, bringing MIT academic culture into SUTD classrooms.

### **SUTD Winter Abroad Program**

The third annual SUTD Winter Abroad Program (SWAP) ran in January 2017 with 56 students from SUTD joining MIT students for the Independent Activities Period. Thirty-one classes were funded either entirely or partially through the collaboration office. This program has been a win-win for both institutions, since SUTD has marketed the opportunity to participate in an exchange program with MIT, and MIT faculty, postdocs, and other personnel have been able to develop new IAP classes or significantly improve existing ones. Over 90 classes have been funded during IAP over the past three years. This year, a one-week “Exploring through the Lens” course was also added to fill in the first week when SUTD students were here on campus before IAP began. Twenty-eight students from MIT and other regional universities participated in this program alongside the 56 from SUTD, exploring the Boston/Cambridge area and culture through the medium of photography. The program was developed in conjunction with Anne Copeland of the Interchange Institute and Marissa Lombardi of Northeastern University.

### **Global Leadership Program**

The Global Leadership Program ran for a fifth year, with a smaller number of students than in past years. Twelve students from SUTD participated, along with six from MIT. Over 10 weeks, the students designed and built electric boats, which they raced on the Charles River in a final Race Day event. Other program activities included a week-one Leadershape Institute, as well as ceramics, wilderness engineering, and globalization classes throughout the ten weeks. Four MIT undergraduates participated as TAs, and one recent graduate of the Mechanical Engineering program, Rachel Reed, served as the lead instructor for the design challenge.

### **MISTI-Singapore Program**

The MISTI-Singapore program did not run this summer due to lack of funding, given the end of the education component of the collaboration.

### **Research Activities**

Current budgets for research at MIT in the MIT-SUTD collaboration run about \$2 million per year for a total of \$20 million over the 10-year research component contract. Approximately 81 faculty researchers from MIT and SUTD are working on projects associated with the International Design Center (IDC). To date, more than 1800 conference/journal publications and presentations have resulted from the combined efforts of the IDC at both MIT and SUTD. Professor of the Practice Chris Magee (Institute for Data, Systems, and Society) remains as the primary co-director of the IDC. The other MIT IDC co-director position remains vacant, as efforts continue to find a replacement

for Professor John Fernandez, who stepped down in late 2015. Collaboration Director John Brisson also continues to help manage the center's day-to-day operations. Professor Magee conducted a research summit in January 2017 in Singapore with Professors Lucienne Blessing and Kris Wood, SUTD IDC co-directors, to encourage ongoing collaborative research between the two universities. Research Scientist Lennon Rodgers left the IDC in May 2017 to take a position at the University of Wisconsin, Madison. Chris Haynes and Oksana Lasowsky were brought on as full-time employees in May 2017. Haynes is shop manager, while Lasowsky is serving a combined shop assistant and administrative assistant role.

As noted in the 2014–2015 and 2015–2016 reports, the IDC co-directors and the collaboration director have been reviewing the IDC's organization and structure with the eye toward long-term sustainability past the 2020 potential end of the collaboration research funding. Deb Payson, director of strategy and outreach, has established a consortium agreement through the Office of Sponsored Programs, and is pursuing companies to fund IDC activities through the consortium. To foster industry connections, she organizes Industry Day forums two times each year, where interested companies come for a day to learn more about the IDC. She also organizes design talks by prominent industry speakers. A job search is also underway to fill a new grants development officer position. It is expected that this person will identify and pursue new funding opportunities through foundation and government grants to complement the efforts on the industry side. The collaboration hopes to receive continued base funding for the IDC beyond 2020 for further efforts in partnership with SUTD. However, the efforts to obtain industry and grant funding will continue to ramp up to assure IDC's financial stability.

### **Additional Notes on Staffing**

Ian Waitz stepped down from the collaboration governing board upon taking the position of vice chancellor at MIT. He was replaced by Anantha Chandrakasan, the new dean of Engineering, who serves along with Martin Schmidt and Philip Khoury. Thomas Magnanti remains on leave from MIT to serve as SUTD's founding president. A search remains underway to find a replacement for SUTD President Magnanti. Jonathan Griffith retired as assistant director for the collaboration in July 2017. Jesse DeLaughter has been promoted to fill this role. Julie Kukharenko was hired to replace Stephanie Lendall in the position of financial administrator.

**John Brisson**  
**Collaboration Director**