

MIT Skoltech Initiative

In academic year 2016, MIT continued its ongoing efforts in five core “tracks” (research, education, innovation, and faculty and student recruitment and hosting) to help build the Skolkovo Institute of Science and Technology (Skoltech), located in Moscow, Russia. The [MIT Skoltech Initiative](#) started the academic year with approximately 20 staff, led by 10 core faculty members, and a headquarters in Building E70. More than 70 additional faculty, together with researchers, students, and staff from across the Institute, participated in the collaboration to build from the ground up a unique, world-class research university in Russia.

The first phase of the MIT Skoltech Initiative formally ended on February 28, 2016. MIT’s activities during the academic year were focused on the winding down of the initial four-year phase of the collaboration and final transfer of deliverables to Skoltech. A second phase of collaboration began on February 29, 2016, and will be covered in next year’s report.

Administration and Governance

Over the first several years of the collaboration, structures, processes, and personnel were put into place at Skoltech. The focus of attention was on how to scale up and transition rapidly from an MIT-driven startup environment to independently operating and functional Skoltech-led administrative systems.

Governance

The Collaboration Steering Committee met on October 1, 2015, to conduct programmatic and financial reviews of collaboration activities. As scheduled, the MIT Skoltech Initiative submitted interim and annual financial and program reports detailing the impact of its activities, and a final cumulative report summarizing collaboration activities for years one through four of the initiative’s term. In addition, an internal oversight committee from MIT’s senior administration met monthly throughout the year to provide high-level guidance on strategic directions as well as operational issues and challenges facing the collaboration.

Outreach

The Outreach in Design and Manufacturing Research and Education effort was launched in AY2015 to support education in design and manufacturing at Skoltech and to keep industry informed about, and engaged in, manufacturing and design education and research activities at Skoltech. In February 2016, MIT transferred a template for a web-based portal to Skoltech to help facilitate industry engagement and make relevant information about design and manufacturing available to a wider audience. Included on the portal were design and manufacturing class projects and video interviews with nine Skoltech product design and advanced manufacturing (PDAM) students discussing their education, what had attracted them to the PDAM program, and their plans after graduation, as a way to highlight Skoltech and the PDAM program and students.

Educational Impact

Faculty and staff in the education and student tracks focused on several tasks: participating in the development, implementation, and transfer of curricular elements for Skoltech; attracting and selecting Skoltech students; supporting Skoltech students at MIT; and supporting the MIT–Russia Program, which is part of MIT’s International Science and Technology Initiatives (MISTI).

Educational Program Development and Implementation

To assist in the development of educational programs, instructional designers and developers, collaborating with MIT faculty members, reviewed, developed, modified, and transferred courses and other curricular elements for the following Skoltech master’s degree programs: information technology, energy, biomedicine, product design and advanced manufacturing, and space. In terms of the implementation of educational programs, the MIT Skoltech education team and the MIT faculty identified and strengthened operational mechanisms and processes, and taught and advised Skoltech students (remotely and in person).

In fall 2015, four courses at Skoltech were taught and supported by five MIT instructors (professors or lecturers) through in-person, remote, and combined formats. MIT was responsible for developing, modifying, and transferring at least 20 (and potentially up to 37) curricular elements to Skoltech by the end of the first phase of the collaboration. From July 1, 2015, through February 28, 2016, 16 curricular elements were transferred, bringing the cumulative total for the initial phase to 33.

MIT’s education team engaged on other fronts to support Skoltech in building and strengthening the operational mechanisms and processes of its educational programs—for example, by creating an “Instructional Designer Hiring Information Guide” to help Skoltech hire its own instructional designers (to carry on the work that MIT had done in the initial four-year collaboration), and by reviewing courses Skoltech students took when they were at MIT, to help attribute them to the appropriate Skoltech curriculum stream. This helped students plan the courses and curricular elements, research and innovation projects, and other learning experiences needed to fulfill Skoltech requirements and pursue their various career goals and plans.

Student Attraction and Selection

MIT continued to assist in the student selection process, through participation in Skoltech’s summer Student Selection Weekend in July 2015, which included challenges, seminars, and interviews. The MIT Skoltech student team also conducted a recruiting and outreach session in fall 2015, in connection with Skoltech’s opening its online admissions process for AY2017.

Student Support

In AY2016, MIT hosted 46 Skoltech master’s degree students as special students—they were part of the so-called Flex Program, aimed primarily at second-year Skoltech students who need coursework that is directly applicable to their degree path, but that is not yet available at Skoltech. The program also included Skoltech students who were

interested in working on a research project with an MIT faculty member. Five Skoltech students came to MIT as visiting students to work on various research projects with MIT faculty in AY2016.

MIT–Russia Program

As part of MIT’s commitment to develop student and postdoctoral associate exchange and internship programs at and for Skoltech, the MIT–Russia Program was established in 2011 as part of MISTI in order to facilitate collaboration between MIT students, faculty, and research scientists, and industry and research leaders in Russia. In AY2016, the MIT–Russia MISTI Program maintained its portfolio of key activities: summer internships for MIT students in Russia; a lecture series on Russian science, culture, and politics; and Russian-language instruction at MIT. During the summer of 2015, the program sent 10 students for internships to Russia at nine host companies, including private- and public-sector entities in both industry and academia. From the reintroduction of classes in the Russian language in fall 2012, through IAP in 2016, 219 MIT students have taken Russian-language classes at MIT.

MIT and Skoltech Faculty Engagement

The collaboration received substantial support from numerous MIT faculty members, who engaged in a range of roles, such as programmatic track leads, faculty search committee members, educational curriculum contributors, and research principal investigators, while creating new opportunities for MIT faculty to engage internationally.

Faculty Recruitment

MIT helped refine and execute strategies for the entire spectrum of faculty recruitment at Skoltech, with two primary areas of effort: an application-based process, generally for junior (assistant professor) and mid-level (associate professor) positions; and a targeted process for more senior positions (full professors and research center directors). Twenty-five MIT faculty members served on specialized faculty search committees. By the middle of 2015, the search process was transferred to Skoltech (one interview and research seminar was conducted at MIT after that, in July 2015). At the time of the transfer, the search committees had (cumulatively) reviewed more than 1,200 applications for positions in Moscow and recommended 83 candidates for hire by Skoltech. MIT faculty had hosted 141 research seminars by Skoltech faculty candidates.

Faculty Development Program

MIT developed and implemented a pioneering faculty development program for Skoltech junior faculty in 2012. Under the program, newly hired Skoltech faculty came to MIT, with visiting scholar or visiting professor appointments, to immerse themselves in the MIT community and develop skills related to entrepreneurship and innovation, teaching and learning, research, leadership, and other competencies relevant to long-term success at Skoltech. Participants also conducted joint research with one or more MIT faculty mentors or hosts.

In AY2016, MIT completed transfer of the faculty development program to Skoltech for further modification and use in Skoltech's own faculty development and mentoring programs. Included were lectures, presentations, and seminars that, along with policies, best practices, and suggestions for other programmatic offerings, could form the core of a program at Skoltech.

Skolkovo Foundation Professorships

In 2015, as in previous years, six MIT faculty members from across the Institute were recognized as Skolkovo Foundation Professors. The MIT-based appointments acknowledge significant engagement in the collaboration between MIT and Skoltech. The 2015 recipients were Professor Carl Thompson (Materials Science and Engineering), Professor James Kirtley (Electrical Engineering and Computer Science), Professor Douglas Hart (Mechanical Engineering), Abraham Siegel Professor of Management Stephen Graves, Philip J. Solondz Professor of Engineering Dick K. P. Yue, and Professor Konstantin Turitsyn (Mechanical Engineering).

New Research Opportunities

Research is one of the core elements of Skoltech's multidisciplinary Centers for Research, Education, and Innovation (CREIs). CREIs represent the building blocks of Skoltech's integrated approach to combining research, education, and innovation activities, organized in five core thematic areas (biomedicine, information technology, space, nuclear, and energy), as well as in cross-cutting areas of research. In addition to providing strategic advice in AY2016, the MIT Research Team supported the building up of Skoltech's internal research organization and administration, strengthening Skoltech's faculty research and ensuring the integrated management of CREIs. The activities of the Research Team addressed Skoltech's priorities in several key areas.

Establishment of CREIs and Industry Programs

The MIT Research Team provided input on facilities, laboratory establishment, and processes and policies for operationalizing CREIs and research at Skoltech. During the previous academic year, the MIT Research Team had designed a readiness review to identify gaps between research needs and operational readiness. During AY2016, the readiness review was further developed into a report, Input to General Coordination of Research Equipment, that addressed practices for setting up and operating university research facilities and outlined a decision tree for laboratory and equipment planning.

Skoltech initiated a review of its biomedicine research strategy. MIT assisted in this process in 2015 by conducting interviews with Russian, Skoltech, and MIT faculty, and international pharmaceutical companies, to develop recommendations on appropriate research areas for Skoltech. MIT followed up those interviews with the identification of a number of research and technology fields that were further examined by expert working groups of MIT, Skoltech, and Russian faculty, resulting in further area-specific recommendations for Skoltech.

Research with a consideration-of-use and industry engagements are central to Skoltech's unique approach and identity as a university. The MIT research team had been providing

advice and recommendations regarding industry outreach and partnering models for the past few years, and supplemented that advice—with input from the MIT Office of Sponsored Programs—with recommendations on setting up industrial consortia.

The MIT Research Team also supported the establishment of Skoltech’s Office for Sponsored Programs and continued to provide advice and input to the operations of that office, including insights on negotiation, budget, audit, payment, and other considerations associated with international research programs, adapted in part from the National Council of Research Administrators (NCURA). In fall 2015, the Research Team also provided guidance on obtaining research funding and other forms of research support targeted at Russian universities.

Building an Innovation Ecosystem

In AY2016, the MIT Center for Entrepreneurship and Innovation (CEI) team continued to build capacity at Skoltech, enabled primarily by MIT-designed foundational educational and administrative programs launched in previous years. Activity highlights during this period included the following:

Center for Entrepreneurship and Innovation Education

MIT developed or enhanced several credit-bearing activities in 2015:

- The Skoltech Innovation Workshop was first developed in AY2013 (and refined in subsequent years) by Chemical Engineering research scientist Luis Perez-Breva. Designed for all entering Skoltech master’s degree students, it teaches and demonstrates the connection between innovation, impact, research, and education, which is central to Skoltech’s mission. A set of materials that can be used to develop projects for the workshop was delivered and transferred to Skoltech in 2015.
- Venture Financing is an immersive, action-oriented course developed in AY2015 by Sloan School of Management senior lecturer Shari Loessberg that explains the principles of early-stage venture financing through the use of simulated term-sheet negotiations with real corporate lawyers and venture capitalists. Enhancements added this year included finding local experts to serve as guest speakers to add timely perspectives to rapidly evolving issues in the Russian economic landscape, as well as guidance in updating and reframing some of the basic assumptions about entrepreneurship in Russia and Moscow.
- So-called innovation assistantships were developed by Luis Perez-Breva and Ilia Dubinsky (Skoltech) to provide Skoltech students with a pathway to hone entrepreneurial and innovation skills by developing a new venture within an academic framework. In AY2016, the Center for Entrepreneurship and Innovation team helped pilot the innovation assistantships program and found two US-based industry mentors.
- MIT designed and transferred an entrepreneurship course that can be used “as is” or in modules suitable for incorporation into the existing Skoltech curriculum. The course focuses on preparing students to put into practice the skills needed to execute an innovative idea.

Knowledge Exchange

MIT's Technology Licensing Office continued to support the professional and operational capability of the Skoltech Knowledge Transfer Office, including supporting licensing activity through the review of intellectual property procedures, review of specific intellectual property case management, mainly through weekly videoconference calls, and through an assessment of Knowledge Transfer Office capabilities and areas for improvement conducted by MIT.

A Multi-year Collaboration

The formal collaboration agreement of October 2011 established a three-year relationship between MIT, the Skolkovo Foundation, and Skoltech, and outlined the possibility of a two-year extension. In late 2012, after one year of activities, the parties extended the term to a fourth year that concluded on February 28, 2016. The entire span of this first phase of the collaboration saw a rapid increase in development and capabilities, used first at MIT and then paralleled at Skoltech, coupled with a transfer of policies, processes, expertise, and content from MIT to Skoltech that accelerated through the end of the first phase. This set of activities and developments led to an accelerated launch and early growth at Skoltech that has positioned it well as a young, innovative institution. The second phase of collaboration, which began on February 29, 2016, and will be covered in next year's report, will build on these experiences and engagement, and will focus on faculty-driven, collaborative research projects.

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