SkTech/MIT Initiative
Educational Programs and Curriculum Design Workshop
15-16 March 2012 – Moscow, Russia – Draft Agenda

Wednesday, March 14

8 PM – Reception at The National Hotel

Thursday, March 15 **Beijing Room, China Cluster**

9:00 AM Introduction and Workshop Goals – Ed Crawley and Duane Boning

9:15 AM SkTech Curriculum Development Foundations – Kristina Edström (KTH)

10:00 Overview of the Russian Academic Landscape – Mikhail Myagkov (moderator)
- Graduate Education at Russian Universities and the RAS Institutes – Isak Froumin (SkF)
- Undergraduate Preparation for Graduate Programs – Timothy O'Connor (MISiS)

10:45 AM Coffee Break

11:00 AM Stakeholder Needs – Ed Crawley (moderator)
- Panel: Perspectives from different types of stakeholders (big industry, entrepreneurial companies, academia) in three thematic areas (IT, Energy, Biomed)
    - Inputs from a Global Perspective (Manuel Heitor/Portugal)
    - Inputs from the Cluster Perspective
    - Inputs from Industrial Perspective
    - Input from Russian Academia (Vladimir Fortov)

12:15 PM High Level Learning Outcomes – Kristina Edström and Ed Crawley
- Context: What Are Learning Outcomes? –Janet Rankin (MIT TLL)
- Framing of questions for working group break outs
    - What knowledge, skills, and attitudes should be fostered to prepare SkTech graduates for careers in startups, industry, research laboratories, universities and other enterprises?
    - What general educational structures and models at SkTech are needed to achieve those learning outcomes?
    - What might unify and build the unique culture of SkTech, and create new models weaving together research and education with entrepreneurship and innovation?

12:30 PM Lunch – Working Group Break Outs – Expected Learning Outcomes
- Beijing, Calcutta, and Bangalore Rooms

3.00 PM Coffee Break

3:30 PM Entrepreneurship, Innovation, & Practice in Education – Jose Estabil (moderator)
Focus: Entrepreneurial Competences as Learning Outcomes
- The MIT-Portugal Experience – Jose Estabil & Luis Perez-Breva (MIT)
- The Tomsk Experience – Stepan Khachin (Tomsk)
- Integrating Engineering and Management in MIT LGO – Don Rosenfield (MIT)
- The ITMO Experience –Nikolai Toivonen (ITMO)

- Internships in MIT SMA and MEng Manufacturing Programs – Brian Anthony (MIT)
- Roving Accelerator Science School as Model for Cross-Disciplinary Education – William Barletta (MIT)
- Phys-Tech / Rosnano E&I Collaboration – Yury Udaltsov (Phys-Tech)
- Plans for E&I Education through the SkTech CEI – Jose Estabil and Ilia Dubinsky (SkTech)

5.00 Break

5.30 Reception and Learning Outcomes Vernissage

6.30 Dinner

Friday March 16th **Beijing Room, China Cluster**

9.00 AM Recap of Results from Working Groups – High Level Learning Outcomes

9.30 AM International Graduate Educational Models – Isak Froumin (moderator)
- Benchmarking (United Kingdom) – Ruth Graham (UK)
- Innovative Engineering Education (Australia) – Ian Cameron (Univ. of Queensland)
- Engineering Curriculum Design (Russia) – Aleksander Chuchalin (Tomsk)

10.45 AM Coffee Break

11:15 AM General Program Design: Goals and Approaches – Duane Boning (moderator)
- Panel: Cross-cutting and Problem-oriented Educational Approaches
  - Computational Modeling and Design Optimization – Luca Daniel (MIT)
  - Materials – Carl Thompson (MIT)
  - Nuclear Science and Technology – Michael Golay (MIT)

12.15 PM Educational Outcomes and Curriculum Design – Ed Crawley (moderator)
- Methodology: Prioritizing Content in Educational Design – Janet Rankin (MIT)
- Framing of questions and desired outputs of working group break outs: learning objectives, outcomes, and curricula for Master's degree programs in pilot programs

12.30 PM Lunch – Working Group Break Outs – Educational Outcomes and Curriculum Design
- Beijing Room: Information Technology – moderator: Jacob White (MIT)
- Calcutta Room: Energy – moderator: Vladimir Bulovic (MIT)
- Bangalore Room: Biomed – moderator: Bruce Tidor (MIT)

2.30 PM Report Outs from Working Groups – Educational Outcomes and Curriculum Design

3.30 PM Reconvene Working Groups on Educational Outcomes: Finalization and Planning: Beijing, Calcutta, and Bangalore Rooms

5.00 PM Conclusions & Next Steps – Ed Crawley & Duane Boning – Beijing Room

5.30 PM Adjourn

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Education Workshop
March 15-16, 2012
Moscow

Desired Outcomes

Gain better understanding of the Russian academic landscape and current practices pertinent to curricular development.

Begin the dialogue with stakeholders in order to gain better understanding of industry needs and Russian economic opportunities.

Gain better understanding of Russian assessment system and the level of preparation characteristics for undergraduates.

Discuss current degree granting regulatory frameworks and compare them to international accreditation and the Bologna process.

Introduce various international educational models. Consider ways to introduce some of the best practices into the existing areas of Russian strength.

Outline general curriculum design principles, including the philosophy of bridging traditional disciplines and engineering practice and methods of translating innovative ideas into curriculum implementation.

Outline the principles of integrating entrepreneurship and innovation (E&I) into graduate engineering curriculum, including coursework, action-based learning, and competitions.

Outline strategies for casting a wide enough net to capture sufficient technology projects and/or industry engagement for action-based Engineering curricula.

Define specific educational goals and degree requirements for the master of science (MS) program.

Prepare a set of guidelines and recommendations for the MS program, focusing on the matrix of thematic areas and cross-cut post-disciplinary areas.

Prepare a set of guidelines and recommendations on university organizational structure and faculty hiring policies that would incorporate educational programs, research centers, and Entrepreneurship and Innovation programs.

Prepare a plan for the design process for the next 6-12 months, including engaging international science and engineering faculty and educational professionals, developing a schedule, and disseminating materials.