Tokyo Tech MOOCs
-Toward World-Class Education-

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Contents

1. Tokyo Tech Overview

2. Tokyo Tech Education Reform

3. Tokyo Tech MOOCs
134 Years of Technical Ingenuity (Monotsukuri)

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1881</td>
<td>Founded as <strong>Tokyo Vocational School</strong> by the Japanese Government</td>
</tr>
<tr>
<td></td>
<td>• To produce engineers with a high level of expertise</td>
</tr>
<tr>
<td></td>
<td>• To revitalize Japan through the promotion of technology</td>
</tr>
<tr>
<td>1929</td>
<td>Elevated to a degree conferring university as <strong>Tokyo Institute of Technology</strong></td>
</tr>
<tr>
<td>2004</td>
<td>Reestablished as an independent administrative institution under the name <strong>National University Corporation Tokyo Institute of Technology</strong></td>
</tr>
<tr>
<td>Present</td>
<td>The Top Science &amp; Technology University in Japan</td>
</tr>
</tbody>
</table>

- Department of Electric Engineering (1941)
- TSUBAME Supercomputer (2010-)
Members and Organization

Members

<table>
<thead>
<tr>
<th>Category</th>
<th>Graduate</th>
<th>International</th>
<th>Undergraduate</th>
<th>International</th>
<th>Faculty</th>
<th>Administrative Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate</td>
<td>5,100</td>
<td>920</td>
<td>4,800</td>
<td>180</td>
<td>1,140</td>
<td>580</td>
</tr>
<tr>
<td>Undergraduate</td>
<td></td>
<td></td>
<td>4,800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International</td>
<td></td>
<td></td>
<td></td>
<td>180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,140</td>
</tr>
<tr>
<td>Administrative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>580</td>
</tr>
</tbody>
</table>

Undergraduate Schools (3)
- Science
- Engineering
- Bioscience and Biotechnology

Graduate Schools (6)
- Science and Engineering
- Bioscience and Biotechnology
- Interdisciplinary Science and Engineering
- Information Science and Engineering
- Decision Science and Technology
- Innovation Management

Integrated Research Institutes
- Chemical Resources Laboratory
- Precision and Intelligence Laboratory
- Materials Research Center for Element Strategy
- Materials and Structures Laboratory
- Research Laboratory for Nuclear Reactors
- Imaging Science and Engineering Laboratory
- Frontier Research Center
- Solution Research Laboratory
Growing International Students

1,224 international students from 70 countries:
12% of total students

<table>
<thead>
<tr>
<th>Country</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>497</td>
</tr>
<tr>
<td>Thailand</td>
<td>133</td>
</tr>
<tr>
<td>Korea</td>
<td>111</td>
</tr>
<tr>
<td>Indonesia</td>
<td>83</td>
</tr>
<tr>
<td>Malaysia</td>
<td>51</td>
</tr>
<tr>
<td>Vietnam</td>
<td>48</td>
</tr>
</tbody>
</table>

(As of May 1, 2014)
Research Areas
(of the 1140 Faculty Members)

- Humanities and Social Sciences
- Chemistry and Materials
- Bioscience and Biotechnology
- Mechanics and Architecture
- Electronics and Information Technology
- Physics, Mathematics, and Earth and Planetary Sciences
Our Goal

Aiming to become one of the world’s top ten research universities

Education
Produce graduates who will thrive in a global society as the world’s top researchers and leaders

Research
Achieve worldwide success in research and innovation & develop infrastructure to enhance research

Globalization
Create a global environment for education and research

Contribution to Society
Contribute to society through research and educational achievement
Contents

1. Tokyo Tech Overview
2. Tokyo Tech Education Reform
3. Tokyo Tech MOOCs
Education Reform

Cultivate talented people in the fields of science and technology with the expertise and skills to lead

1. Build the “Education System of One of the World’s Top Universities”

2. Innovate “Learning”

3. Promote Ambitious Internationalization
Undergraduate and graduate schools will be joined – a first in Japan

Seamless degree programs

The education system will allow for easier transitions from bachelor’s to master’s and master’s to doctoral programs. Students will be able to better visualize their academic goals and choose from various courses and challenges to achieve those goals.

Leadership education

With the new education system, students will gain vital leadership skills through broad training in their majors, research, and liberal arts courses.

Earlier involvement in graduate-level research

Under certain conditions, undergraduates will be able to take master’s-level courses and join research projects. Qualifying master’s students will be able to do the same for doctoral-level courses and research. This will provide a more seamless transition between degree programs.
## School Reorganization

### Current System

#### Undergraduate
3 Schools 23 Departments
- School of Science
- School of Engineering
- School of Bioscience and Biotechnology

#### Graduate
6 Schools 45 Departments
- Graduate School of Science and Engineering
- Graduate School of Bioscience and Biotechnology
- Interdisciplinary Graduate School of Science and Engineering
- Graduate School of Information Science and Engineering
- Graduate School of Decision Science and Technology
- Graduation School of Innovation Management

### Discontinuity in curricula

### New System

#### 6 Schools, 20 Departments

<table>
<thead>
<tr>
<th>Science</th>
<th>Mathematics / Physics / Chemistry / Earth and Planetary Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>Mechanical Engineering / Systems and Control Engineering / Electrical and Electronic Engineering / Information and Communications Engineering / Industrial Engineering and Economics</td>
</tr>
<tr>
<td>Materials and Chemical Technology</td>
<td>Materials Science and Engineering / Chemical Science and Engineering</td>
</tr>
<tr>
<td>Computing</td>
<td>Mathematical and Computing Sciences / Computer Science</td>
</tr>
<tr>
<td>Life Science and Technology</td>
<td>Life Science and Technology</td>
</tr>
</tbody>
</table>

Institute for Liberal Arts
Academic Quarter System

Quarter system

Under the quarter system, one academic year will be divided into four quarters.

<table>
<thead>
<tr>
<th>1Q</th>
<th>2Q</th>
<th>Summer Vacation</th>
<th>3Q</th>
<th>4Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>April–early June</td>
<td>Mid June–early August</td>
<td>Mid August–mid September</td>
<td>Late September–late November</td>
<td>Early December–early February</td>
</tr>
</tbody>
</table>

- Intensive learning in shorter periods will enhance learning effectiveness.
- Flexible academic plans will make it easier to study abroad or do internships.
- Offering courses more frequently will better accommodate students.
- Enrollment in Tokyo Tech will be more accessible for international students.

Class schedule

- Classes will be organized in 45-minute periods. Most classes will span two periods (90 minutes).
- Example: Course A (worth two credits) is taught twice a week on Mondays and Thursdays during periods 1 and 2.
- A course within a quarter will consist of 15 classes and 2 make-up classes.
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MOOCs in Japanese Universities - MEXT Report (March, 2015) -
“Investigation of education improvement utilizing MOOC”, MEXT, (March, 2015)
Tokyo Tech MOOCs -Mission Statements-

Share Tokyo Tech education quality world-wide

Provide on-campus students with diverse learning environments / opportunities
Tokyo Tech OCW/OCW-i
Tokyo Tech MOOCs -Launch-

Online Education Development Office (OEDO) created in Center for Innovative Teaching and Learning (CITL).
Tokyo Tech MOOCs
-What’s in Production-

Deep Earth Science and Modern Japanese Architecture will be offered on edX in the fall of 2015.
Tokyo Tech MOOCs
-Release Plans-

September 2015
“Introduction to Deep Earth Science: Part 1”
Instructor: Prof. Kei Hirose
Learn about the nature and dynamics of the Earth’s core, mantle and crust.

November 2015
“Modern Japanese Architecture: From Meiji Restoration to Today”
Instructors: Prof. David Stewart and Prof. Koichi Yasuda
Explore non-traditional Western-style and Modernist buildings in Japan from the 19th century to the present day

Early 2016
“Introduction to Engineering Physics” (TBD)
“Introduction to Electrical and Electronics Engineering” (TBD)
Tokyo Tech MOOCs
-Leveraging MOOCs on Campus-

Learn with MOOCs in English. Flip classrooms and provide active learning with MOOCs in regular courses.
Tokyo Tech MOOCs
-Building Courses with Students-

MOOC creation with teaching assistants allows for the improvement of content from a student’s point of view and for a “learning through teaching” opportunity for students.
Tokyo Tech 10 Years from Now

Goal
one of the world’s top ten research universities

Global hub of knowledge and talent in science and technology by sharing Tokyo Tech Quality with the world
Thank You