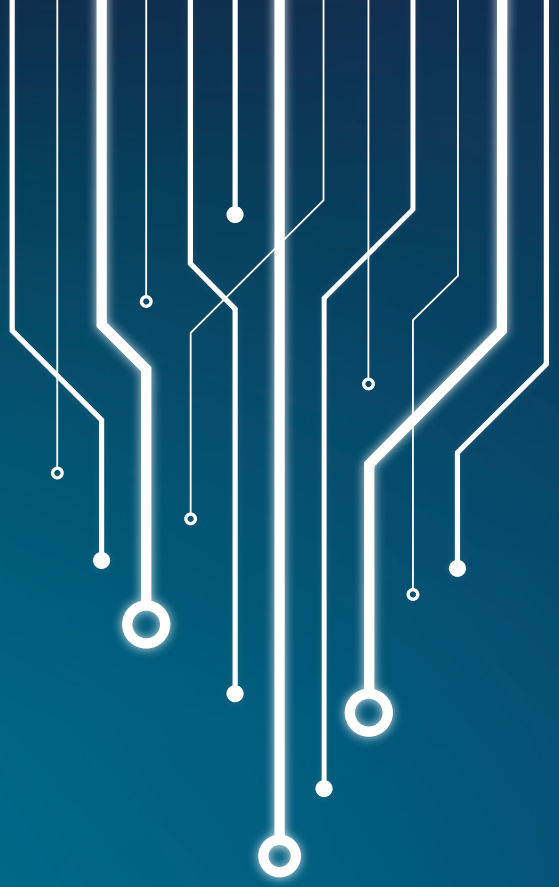


Tokyo Tech

Engineering Sciences and Design

Tokyo Institute of Technology (Tokyo Tech) is a research-based university pursuing excellence in both education and research. Our students are notable for their creativity and leadership skills and our research makes significant contributions to a broad range of science and technology to create new and powerful synergies of interaction and collaboration.

OUTLOOK OF Tokyo Tech

Tokyo Tech is Japan's top university for science and technology and has a history spanning more than 130 years. Of the nearly 10,000 students—including 1,200 international students—at the Ookayama, Suzukakedai, and Tamachi campuses, half are in undergraduate programs and the other half in graduate and doctoral programs. There are 1,200 faculty and 600 administrative and technical staff.

In the 21st century, the role of science and technology universities has become increasingly important. Tokyo Tech continues to develop global leaders in the fields of science and technology, and contributes to the betterment of society through its research, focusing on solutions to global issues. The Institute's long-term goal is to become the world's leading science and technology university.

TOKYO TECH'S THREE DISTINCTIVE FEATURES

High Quality and Volume of Papers

Tokyo Tech is one of Japan's top four universities in terms of total number of published papers (volume) and citations (quality).

Strong Industry Collaboration

Tokyo Tech ranks fourth in domestic patent registrations, is involved in 483 collaborative research projects with industry, and has organizational ties with 13 companies (as of 2017).

Innovative Students

Tokyo Tech students are highly creative and with the Institute's multi-faceted support are undertaking the challenges of innovative projects in research and business.

INTERNATIONAL RELATIONS

Double Degree Programs

Tsinghua University

École des Ponts Paris Tech (ENPC)

National Chiao-Tung University

KAIST Korea Advanced Institute of Science and Technology

Academic Consortiums

ASPIRE League
Asian Science and Technology Pioneering Institutes of Research and Education

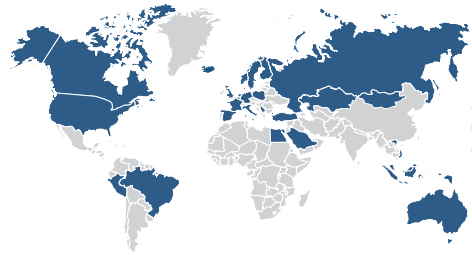
TKT CAMPUS Asia
日中韓先進科学技術大学教育環高度化プログラム

Overseas Contributions

E-JUST
Egypt - Japan University of Science and Technology
エジプト日本科学技術大学

TAIST TokyoTech

Partner Universities



School-To-School agreements with 146 universities & research institutions (As of May 1, 2014)

Example of a Double Degree Program

The Tokyo Tech-Tsinghua University Joint Graduate Program

Period of stay in Japan
Period of stay in China

1. Launched in 2004 as a dual master's degree program in 3 courses (Nanoechnology, Bioscience and Biotechnology, and Decision Science and Technology)
2. Students enroll simultaneously at both Tokyo Tech and Tsinghua University as regular students, study under the supervision of academic supervisors at both universities, and earn master's degrees from both universities.
3. The program takes two and a half years for Tokyo Tech students and three years for Tsinghua University students to complete.
4. A similar program for doctoral students was launched in 2007 in which students earn a degree from one of the universities after three years of studying under the joint supervision of faculty members from both universities.

	Tokyo Tech students		Tsinghua University students	
1st-year			Mar.	Entrance examination (Tsinghua)
	June	Application deadline (Tokyo Tech)		
	Aug.	Entrance examination (Tokyo Tech)	Aug.	Entrance examination (Tokyo Tech)
			Sept.	Entrance ceremony (Tsinghua) Lectures and research begin
2nd-year	Apr.	Entrance ceremony (Tokyo Tech) Lectures and research begin		
	Aug.	Arrival at Tsinghua Lectures and research begin	Sep.	Arrival at Tokyo Tech Lectures and research begin
3rd-year	July-Aug.	Return to Tokyo Tech Lectures and research	Aug.-Sept.	Return to Tsinghua Lectures and research
			Mar.	Conferral of degree (Tokyo Tech)
4th-year	Mar.-Apr.	Arrival at Tsinghua Lectures and research		
	July	Conferral of degree (Tsinghua)	July	Conferral of degree (Tsinghua)
	Sept.	Conferral of degree (Tokyo Tech)		

(Periods of stay in China and Japan differ depending on the course of study.)

Graduate Major in
Engineering Sciences and Design (ESD)

Solving society's problems through engineering design

Three features of the ESD Major

TRANSCENDING SPECIALIZATIONS
Students with different backgrounds & majors

REAL-WORLD PROJECTS
PBL courses in collaboration with industry

WORLD-CLASS FACULTY & FACILITIES
Exchange program with a design factory

ESD Courses

Fostering innovators who can make real contributions to society by merging technology with value creation

Master's Course

Basics of engineering design
Fundamentals in design thinking and in various research fields presented through group work as basis of engineering design.

Practical applications through PBL
On-campus and/or off-campus projects providing practical training in engneering design.

Design theory
Theories of engineering design and related academic fields.

Artifact Design
Basic technology and engineering design subjects

Social systems design
Engineering design subjects related to software, services and systems for society.

Ergonomics & environmental design
People-oriented engineering design and engineering subjects, such as user-focused design and user-experience design.

Specialization
Seminars and research directed at specific topics for master's papers.

Doctoral Course

Practical applications in design
Instruction in teaching methodology, including mentoring and facilitating skills, for MA and PhD graduate students participating in student projects and PBL courses.

Research-related subjects
Research conducted through student-oriented off-campus (overseas is encouraged) projects providing practical training in engineering design.

General subjects
General knowledge and academic disciplines related to the teaching of engineering design.

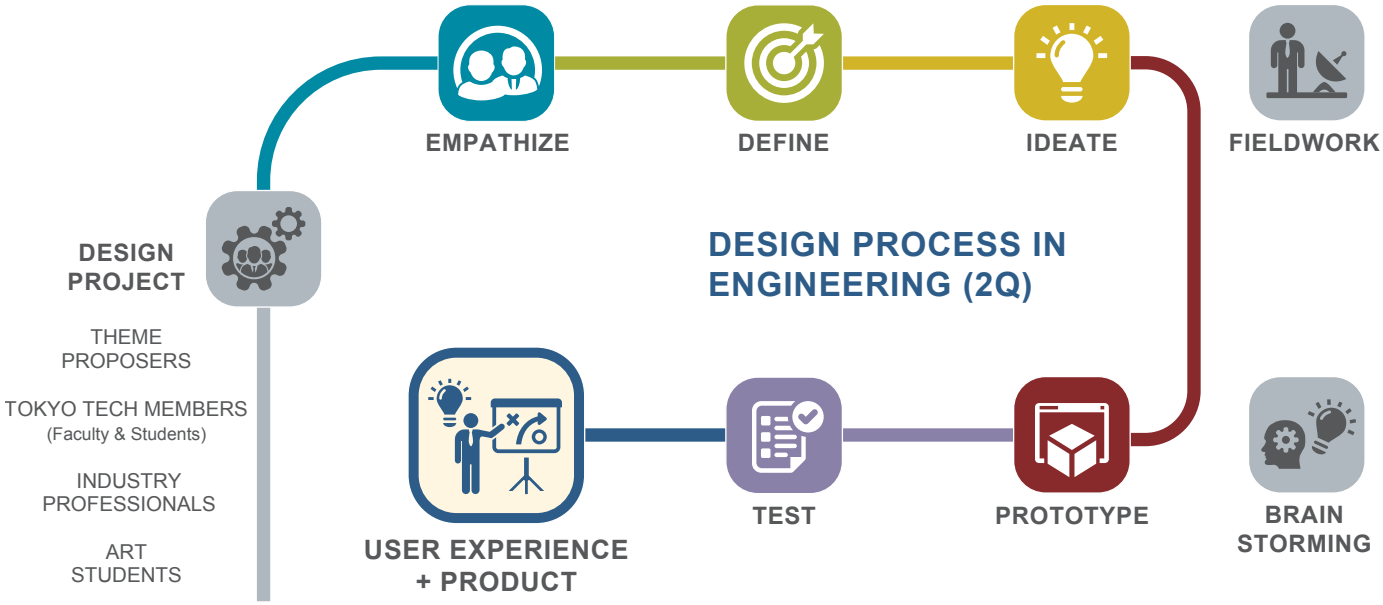
Research

Doctoral Course	Action research	Solving humanity's problems
Research on next-generation design for creating experiences and objects	Action research through collaborations with local communities, industry, and other universities	An engineering approach to solving "wicked problems"
Learning about design theory and practical applications through Project Based Learning (PBL). The study of next-generation design through the construction and implementation of desirable circumstances; feedback on interactions between users and human artifacts; and applicable business models. The objective is to foster design-oriented thinking directed at next-generation design.	In the engineering design course, students have the opportunity to acquire hands-on experience through collaborations with local governments, industry, and start-up businesses as well as entities offering venture capital. Through these collaborations students are able to expand their research to encompass more practical and complicated topics. By returning the fruits of their research to society, students will also be able to act on feedback to further develop their problem-solving skills.	How should complex systems of human activity, urban management, disaster recovery, agriculture, and air traffic systems, for example, be designed, and how should their various problems be solved? Effective solutions require the integration of such factors as technology, policies, decision-making analyses, operations research, innovation theories, production and management engineering. Together, these are referred to as engineering systems and are being studied by such academic centers as MIT, Stanford, and Delft University of Technology. This graduate major is characterized by its engineering approach to solving "wicked problems."

How ESD works

Engineering Design Projects

ESD majors take a core PBL course called Engineering Design Projects (EDP). In this course, students are asked to organize themselves into design teams, propose design solutions, design artifacts addressing real-world problems. The teams are made up of a diverse selection of people including Tokyo Tech students, art students, and industry partners to encourage innovative design ideas that will meet real-life user needs and take into consideration real-life environments.



An EDP example

A design team noted problems with video conferencing and set about to create a remote video conferencing device that facilities communication by enhancing the sense of reality.

Team members

Industry Participant
(S/W Development)

Student A
(Architecture)

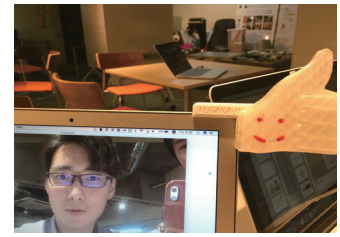
Student B
(Mechanical Eng.)

Student C
(Mechanical Eng.)

Process

PROBLEM
Most research and applications of video conferencing systems are on technical aspects only, but to improve communication, ambience (facial expressions and reactions) is also important.

SOLUTION
The team created an artifact that helps to show a respondent's emotions by reading facial expressions, the tilt of the chin, etc.



"I learned how to communicate and work with people with different backgrounds, different perspectives, and different approaches to communication."

TOKYO TECH - OOKAYAMA CAMPUS
ISHIKAWADAI Bldg. 5 3rd Floor - Design Factory

Tokyo Tech