

ASPIRE Undergraduate Engineering Design Challenge 2024

Asia's top science and engineering universities participate

ASPIRE Undergraduate Engineering Design Challenge (UEDC) 2024, an international workshop aimed at undergraduate students and facilitated by the ASPIRE League*, of which Tokyo Tech is a member, was held over a five-day period from Monday, June 24 to Friday, June 28. The ASPIRE League is a consortium of top science and engineering universities in Asia, established in 2009 under the leadership of Tokyo Tech, with the aim of creating an innovation hub in the region. Continuing from last year, Tokyo Tech also hosted this year's event, which was held in person at the Ookayama campus.

This program was planned and implemented by Professor Kazuaki Inaba (Department of Transdisciplinary Science and Engineering, School of Environment and Society) together with Associate Professor Masaki Yagisawa (Department of International Digital and Design Management, School of Management, Tokyo University of Science) as a workshop where students can learn the basics of engineering design.

A total of 29 undergraduate students participated in this workshop: 12 students from Tokyo Tech, and 17 students from Korea Advanced Institute of Science and Technology (KAIST), Hong Kong University of Science and Technology (HKUST), and Nanyang Technological University (NTU Singapore).

For Tokyo Tech participants, the program was also offered as a 2-credit course called "International Engineering Design Project Fundamentals S."

Workshop schedule

	June 24 (Mon)	June25 (Tue)	June26 (Wed)	June27 (Thu)	June28 (Fri)
10:45-11:35	Ice break & Orientation	Instruction	Instruction	Instruction	Group Work
11:35-12:25		Group Work	Group Work	Group Work	
13:30-14:20	Instruction	Japanese Culture Program	Instruction	Instruction	Group Work
14:20-15:10	Group Work		Group Work	Group Work	Final Presentation & Reception
15:25-16:15					
16:15-17:05	Feedback Meeting		Feedback Meeting	Feedback Meeting	

Workshop

As with the 2023 program, the aim of this year's UEDC was to understand the five basic steps of design thinking — empathy, definition, conception, prototyping, and testing — and to explore new designs and services. Students worked in groups on the task of designing a product, system, or service inspired by a Japanese cultural event and intended for a Japanese audience. The students were divided into five mixed groups from different universities, and began by researching Japanese events and comparing them to those in their own countries. Each team chose a unique event — such as cherry blossom viewing, fireworks, *setsubun*, or Japanese-style Valentine's Day — and interviewed Japanese participants about the event. The participants then repeatedly tested their ideas by developing prototypes before finalizing their product or service proposals for presentation on the final day.

During the workshop, Professor Shigeki Saito, Professor Miki Saijo, Associate Professor Takumi Ohashi, and Assistant Professor Yuki Taoka — all of whom belong to the Department of Transdisciplinary Science and Engineering at the School of Environment and Society — made comments on and gave advice regarding each team's activities at three feedback meetings, after which participants refined their ideas for their final presentations.

In addition, six students from Tokyo Tech joined each team as teaching assistants to support team discussions.

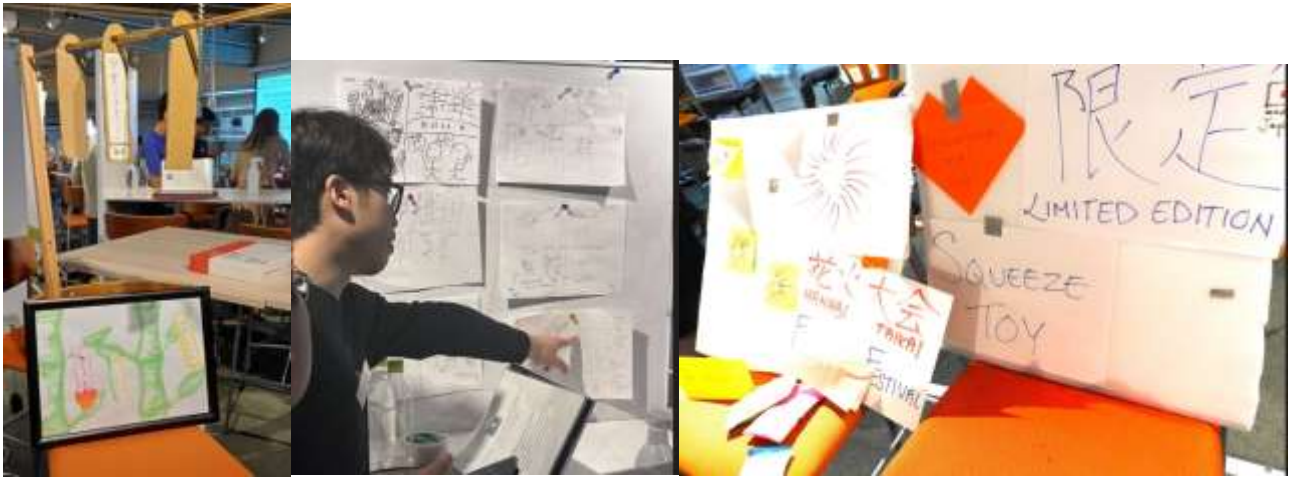
Faculty members

Teaching staff and mentors

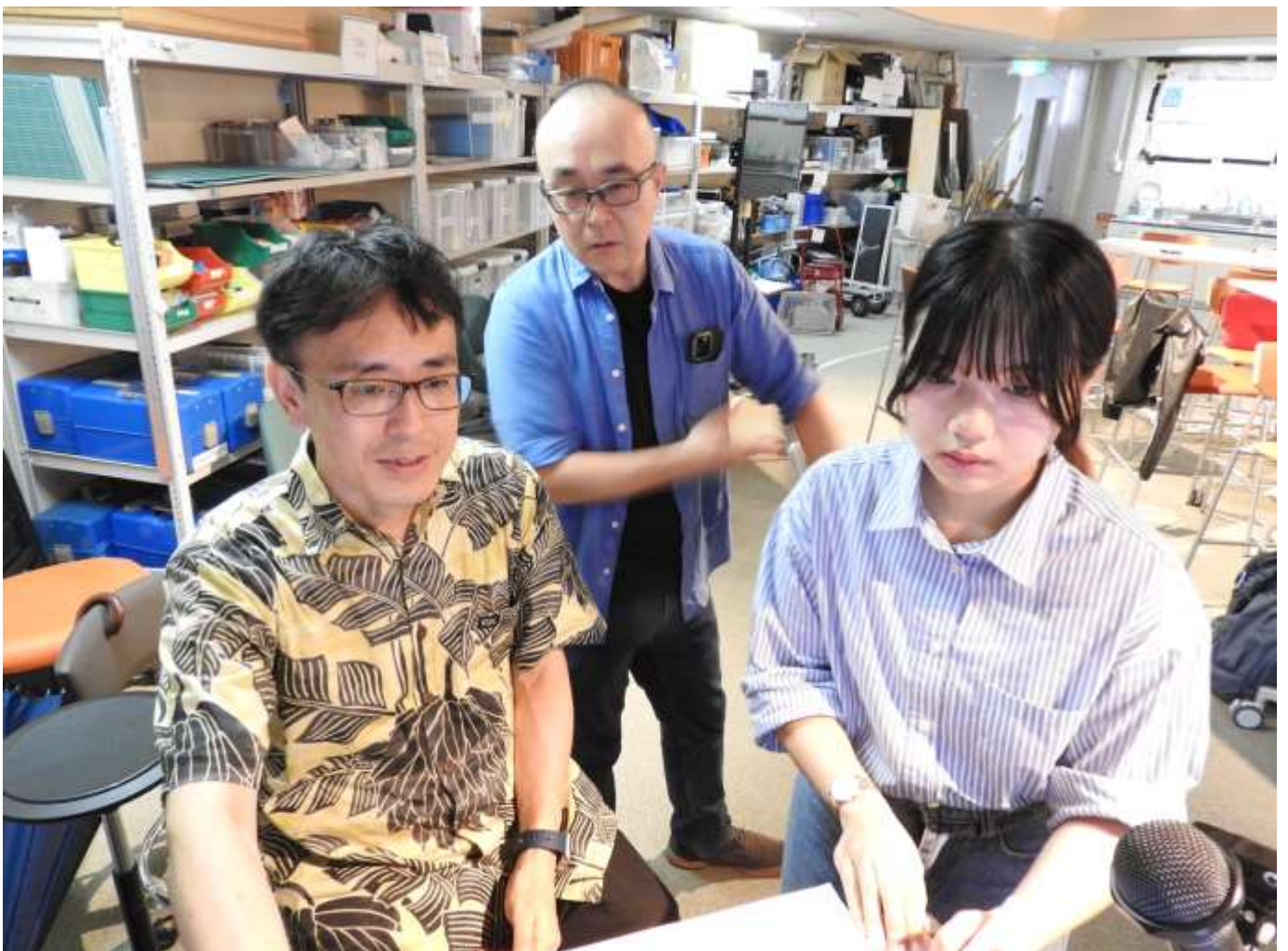
 Kazuaki INABA Engineering design	 Masaki YAGISAWA Art		
 Miki SAIJO Communication design	 Shigeki SAITO Design thinking	 Takumi OHASHI Smart agriculture	 Yuki TAOKA Co-design

Student activities





Guidance for one student by Professor Kazuaki Inaba (Department of Transdisciplinary Science and Engineering, School of Environment and Society) and Associate Professor Masaki Yagisawa (Department of International Digital and Design Management, School of Management, Tokyo University of Science)



The team, consisting of five to six members, works together under the guidance of a teaching assistant to continually realize and refine their ideas until the final presentation on the last day of the program.

Team 2 students (all six from left) and teaching assistant (right)



Team 5 students (center five) and teaching assistants (left and right)



Japanese Culture Program

On June 25, a Japanese Culture Program was held at the Ookayama campus of Tokyo Tech to deepen students' knowledge of Japanese culture.

The first half of the program featured a lecture on Noh drama as an introduction to Japanese culture by Associate Professor Mariko Anno of the Institute for Liberal Arts, followed by a live performance of the nohkan (Noh flute) by Associate Professor Anno herself, making for an elegant and insightful lecture.



The second half of the program featured an original *taiko* (drum) performance by "YUKIGAYA-DAIKO," a group based in Ota Ward in Tokyo, as well as a *taiko* and *bon* dance performance by the students themselves to the tune of the song *Tokyo Ondo*.

This was a rare opportunity for all students to experience *taiko* drumming, and the event was a great success.



Final presentation

During the final presentation on June 28, the participants presented the results of their group work through a mixture of slides and skits, which they performed with great enthusiasm.

Team 1: Introduced a game machine that serves as a good luck charm, emitting an aromatic fragrance to reduce stress while waiting to watch summer fireworks.

Team 2: Introduced a digital service that makes it easy to efficiently write and manage wishes during the Tanabata Festival.

Team 3: Introduced a cooking utensil with a temperature control function, designed to ensure successful handmade chocolates for Valentine's Day, called "Maze Mahou."

Team 4: Introduced a bean gun for the Setsubun Festival that allows children to playfully throw beans without the risk of accidental ingestion, called "Picha-Picha Mame Teppo."

Team 5: Developed an eco-friendly folding lunch box to address the problem of waste at cherry blossom viewing events.

Over the course of a limited five-day period, the teams deepened their understanding of Japanese events and culture. They interviewed Japanese students at Hisao & Hiroko Taki Plaza (Taki Plaza) and other places at Tokyo Tech, exploring user needs through various interviews. The participants then presented their solutions in a practical and engaging manner.



The final presentations were reviewed by Professor Jun-ichi Takada (secretary general of the ASPIRE League and dean of the School of Environment and Society), Professor Nobuhiro Hayashi (chair of the Steering Committee for Consortium Activities and vice president for international affairs), Professor Tsuyoshi Michinobu (School of Materials and Chemical Technology), and Mr. Darwin T. S. Yim from the Hong Kong University of Science and Technology (program coordinator at the Office of the Dean of Engineering and Center for Global & Community Engagement at HKUST). They each provided comprehensive feedback at the conclusion of the presentations.



**[Prof. Jun-ichi Takada, Secretary General of the ASPIRE League
(Dean of the School of Environment and Society, Tokyo Tech)]**



"I thoroughly enjoyed listening to the group's presentation on developing a product for a distinctive Japanese event. I can only imagine how stimulating it must have been to go from their first meeting to crafting a cohesive concept as a team within a week. I hope that this experience, along with the friendships formed, will contribute significantly to their future growth."

**[Prof. Nobuhiro Hayashi, Chair of the Steering Committee for Consortium
Activities (Vice President for International Affairs, Tokyo Tech)]**



"We are delighted that so many students from ASPIRE League member universities were able to join us in Japan and successfully participate in UEDC. This program is something we take great pride in offering to the world, and I would like to extend my deepest gratitude to Professor Inaba and all the faculty and staff who worked tirelessly to organize it. Throughout the workshop, I witnessed firsthand the joy and camaraderie that can only come from being together in person, a reminder that in our age of ubiquitous information, some experiences are simply irreplaceable. Listening to the final presentations, I was particularly impressed by the natural use of Japanese expressions by the international students. This demonstrated not only their linguistic progress but also the deepened mutual understanding and shared awareness within the team, as they worked together to solve complex problems. I hope that the participants will continue to nurture the relationships they have formed here, and that together we can strive towards a peaceful and harmonious world without borders."

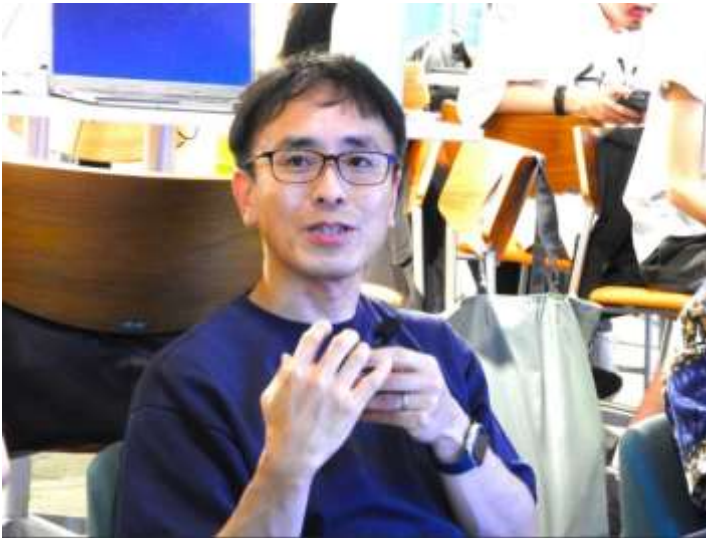
Closing Ceremony

Following closing remarks by Professor Kazuaki Inaba, the faculty member in charge of ASPIRE UEDC2024, and Professor Jun-ichi Takada, secretary general of the ASPIRE League and dean of the School of Environment and Society at Tokyo Tech, Professor Nobuhiro Hayashi, vice president for international affairs, presented certificates to all participants. In addition, two students who celebrated their birthdays during the workshop were honored with commemorative gifts.





Professor Kazuaki Inaba



The participants spent an intense five days in the design workshop, immersing themselves not only in the design thinking process and the perspective of Katsushika Hokusai, but also gaining insights into Japanese culture. They came up with a number of fascinating products, systems, and services. While this approach may not be applicable to all problems, we hope that the knowledge they gained will prove useful in various future endeavors.

Commemorative photo on the last day



Reception

At the reception following the closing ceremony, all participants mingled with their peers and faculty members over hors d'oeuvres.



Team 1 students (all six from right) and teaching assistant (left)



Team 3 students (all six from right) and teaching assistant (left)



Team 4 students (all six from right) and teaching assistant (left)



*The ASPIRE League is a consortium of top science and engineering universities in Asia, established in 2009 at the initiative of Tokyo Tech, with the aim of forming a hub for innovation in Asia through the development of science and technology and the development of human resources. The five member universities are Tsinghua University (China), Hong Kong University of Science and Technology (China), Nanyang Technological University (Singapore), Korea Advanced Institute of Science and Technology (Korea), and Tokyo Tech, the last of which has served as the secretariat since its establishment.

Related Links:

Official Site of the ASPIRE League
<http://www.aspireleague.org/>

ASPIRE League
<https://www.titech.ac.jp/english/international-cooperation/global/featured/aspire>

ASPIRE League: Tokyo Tech Global Stories
<https://www.titech.ac.jp/english/public-relations/global/stories/aspire-league>