

EARTH on EDGE

Entrepreneurial Action Renaissance in Tohoku and Hokkaido on
Exploration and Development of Global Entrepreneurship for NEXT generation

CONSORTIUM INFORMATION

<https://edge-next.eng.tohoku.ac.jp>

EARTH on EDGE



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Wings Flying into the Future as Entrepreneurs

The logo visualizes the two "E's" - initials of the project name - as a motif of wings flying toward the future, representing entrepreneurs undertaking new projects. The six feathers comprising the wings are reminiscent of each university, expressing the image of business to be realized through synergistic cooperation by said member university. The sleek yet dynamic silhouette and earth green* color convey the frontier spirit aiming to create new values.

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OVERVIEW

“EARTH on EDGE” is an abbreviation of “Entrepreneurial Action Renaissance in Tohoku and Hokkaido on Exploration and Development of Global Entrepreneurship for NEXT generation”.

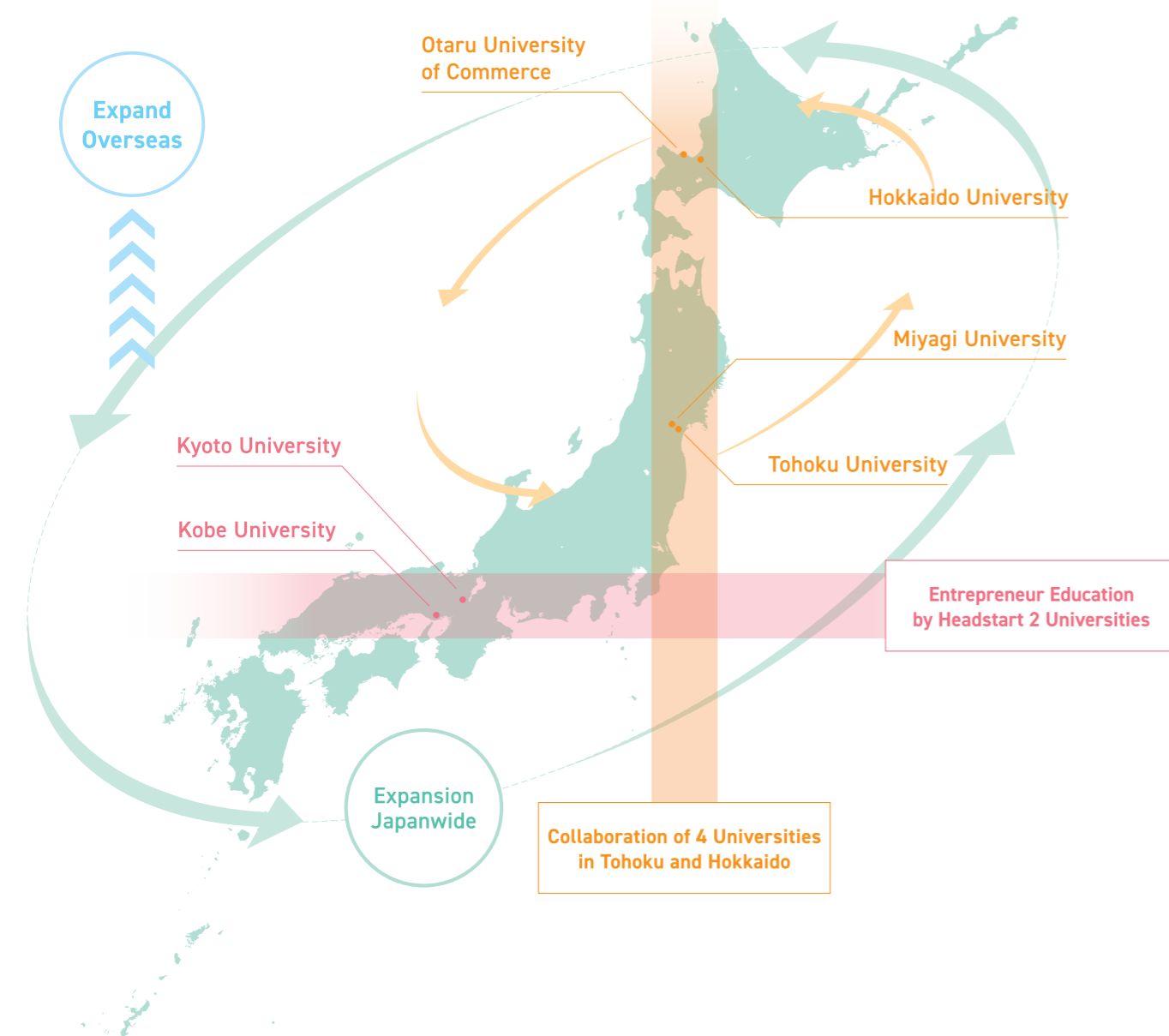
Tohoku University leads the consortium with Hokkaido University, Otaru University of Commerce, Miyagi University, Kyoto University and Kobe University.

Based on the shared value of “Practice-Oriented Research and Education” for the six universities, we promote practical education comprehensively together with companies and related institutions. We also adopt advanced education programs such as Stanford Biodesign and Hult Prize from abroad, in addition to collaborating with foreign universities such as University of California, Berkeley.

Beyond said efforts, synergistic effects will be generated from cooperation between Tohoku University, Hokkaido University, Kyoto University and Kobe University in cutting-edge basic plus applied research. Otaru University of Commerce and Miyagi University will train entrepreneurs to tackle social issues deeply rooted in communities.

Vision for Next-Generation “EARTH on EDGE”

We will accelerate this target by adding Kyoto University and Kobe University, both located in Pacific Belt Zone (advanced entrepreneurship education zone), to Tohoku and Hokkaido regions (“EARTH” mentioned above) as shown in the map below.



PROGRAM SUMMARY

Cultivate practical-minded human resources who can act as entrepreneurs to create new value in the region. We will deepen industry-academia-government collaboration, build and promote an innovation ecosystem that allows sustainable education and practice.

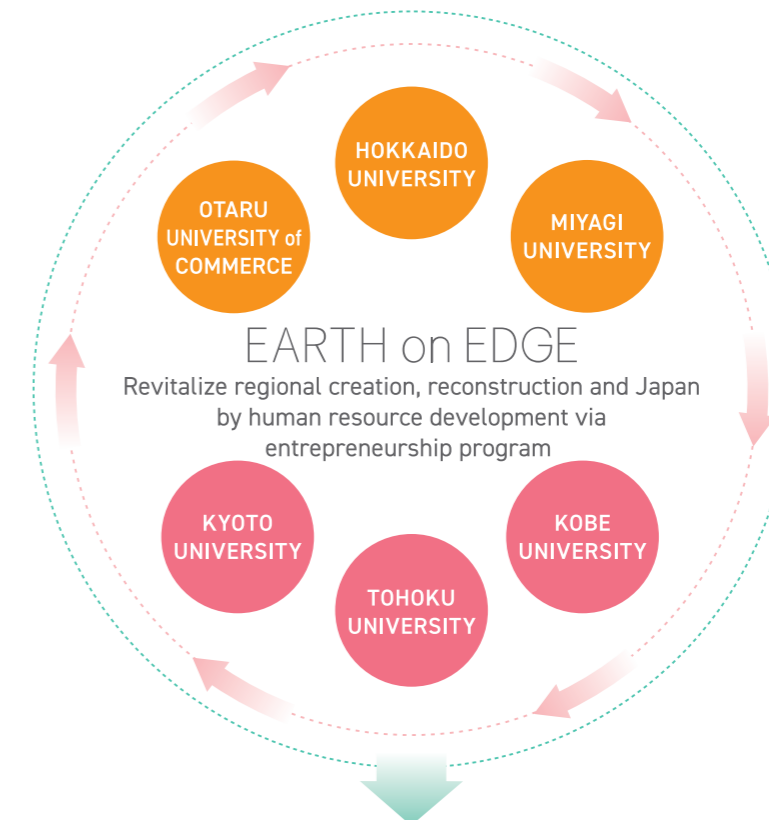
Our vision for entrepreneurship education under “EARTH on EDGE” consortium is to inculcate talented entrepreneurs who create (1) new industries originated from regional characteristics and from global market-in strategy, and (2) revitalize local communities in order to tackle social problems Japan faces such as population decline, aging society, prolonged economic stagnation and environmental issues.

To accomplish this goal, we will establish a practical and sustainable education system in cooperation with industries, academia, public and financial sectors including startups and leading foreign institutions that have shaped advanced innovation ecosystems.

Produce practical-minded human resources that can become active entrepreneurs who create new values in the region. We will deepen industry-academia-government collaboration, build and promote an innovation ecosystem which enables sustainable education and practice.

A New Value Creation Platform “EARTH on EDGE”

A core value the six universities in our consortium shares is “Practice-Oriented Research and Education” which has roots especially in Tohoku and Hokkaido regions for revitalizing the local economy.



Create Future Industries Through Entrepreneurship Education

EDGE-NEXT : Exploration and Development of Global Entrepreneurship for NEXT generation

This program is designed to enhance entrepreneurship activities, create promising business models based on advanced technology at academic institutions, re-educate industry’s human resources to enable initiation of new projects within existing corporations, and establish nationwide entrepreneurial networks. This program is expected to provide a human capital platform for startup ecosystems. Intensive collaborations with private companies and overseas institutes are required.

Implementing organization: 5 consortia (Lead Universities: Tohoku University, University of Tokyo, Nagoya University, Kyushu University, Waseda University)
 Period: 5 years (FY2017-2021)

Entrepreneurship Program for Leading a Resilient Society

The "EDGE-NEXT Common Fundamental Project" is a program for all 30 EDGE-NEXT institutional universities, consisting of five consortium, to improve entrepreneur development projects throughout Japan. In FY 2019, EARTH on EDGE consortium led by Tohoku University launched the "Entrepreneurship Development Program to Lead the Construction of a Resilient Society" and founded its operation under a three-year plan.

The program consists of lectures, workshop and fieldwork. Based on the design thinking, systems thinking and business design approach provided throughout each session, the program aims to impart four skills: "understanding social systems," "prediction of drastic changes in circumstances," "perspective of self-help, mutual aid and public support" and "balancing the value of disaster prevention/mitigation (social value) with economic value."

In fieldwork, we have adopted the process of actually entering the areas stricken by natural disasters, setting up lecture and hearing sessions for local communities, plus directly listening to participants in and understanding the current state of the reconstruction process.



FY 2019

Future Resilience through Review of the Reconstruction Process

- Kobe, Tohoku and Hokkaido visits -

In FY 2019, we recruited 20 participants from the EDGE-NEXT consortium nationwide and held a series of sessions (Kobe in September, Tohoku region in October and Hokkaido in November) for three days, three times starting from September during the same fiscal year. The Tohoku region session in October was changed to an online lecture due to a typhoon hit, but as an alternative, the Tohoku fieldwork was held in December to collect information on the situation of reconstruction, disaster prevention and mitigation through site visits and interviews.

In addition, as the program's final step, on the last day of the Hokkaido session we provided an opportunity to make presentations on the "business model that drives disaster prevention/mitigation/reconstruction" as designed by the participants and enabling their presentations. Five reviewers were invited to the presentation and each reviewer provided feedback, to complete the 2019 program.



FY 2020

Future Resilience through Review of the Reconstruction Process

- Capturing the "Situation Facing You" and Proposing New Resilience -

In FY 2020, the second year of the program, we held an online event over a month from August 25, using the theme of "capturing the situation facing us" and proposing new resilience." In 2020, when we were exposed to the new threat of infectious disease (COVID-19) in addition to natural disasters, we changed the original plan to expand from Kobe, Tohoku region and Hokkaido into Tokai region and Shikoku island, but we have changed all sessions to online.

This year, with the participation of four working adults from the BOSAI-TECH Innovation Creation Program of Sendai City, the program started with 24 participants. Instead of fieldwork and field surveys, which were not possible, we conducted a total of 19 lectures, combining on-demand and real-time classes. On-demand lectures used video materials developed and produced by the program teachers. Furthermore, since face-to-face instruction was not available, we proceeded with the program by allowing students to ask questions and follow them up almost daily using a predetermined office hour setup.

For 2020, we divided the presentation into two parts, an interim presentation and a final presentation, to receive feedback from six reviewers. The program has developed into a continuous program under which the students may brush up on each other's assignments after the end of their program.

LECTURE SCHEDULE

Date	Title of Lecture
Tuesday, Aug 25th	Orientation

Estimate Drastic Changes due to Disasters and Identify Vulnerabilities of Social Systems

Monday, Aug 31th	Vulnerabilities of Social Systems
Monday, Aug 31th	Introduction to Systems Thinking
Tuesday, Sep 1st	Workshop on Systems Thinking
Wednesday, Sep 2nd	Disaster Mitigation based on Study of Historical Heritage Assets
Wednesday, Sep 2nd	Computational Simulation of Disasters
Wednesday, Sep 2nd	Increased Hazards due to Simultaneous Occurrence of Pandemics and Disasters
Wednesday, Sep 2nd	Psychological Aspects of Disasters
Thursday, Sep 3rd	Online Fieldwork - Footages from The Great East Japan Earthquake
Friday, Sep 4th	The Great East Japan Earthquake Recovery - Example of public housing reconstruction
Friday, Sep 4th	The Great East Japan Earthquake, Onagawa and Ogatsu: Social Vulnerabilities and Drastic Changes

Self-help · Mutual Aid · Public Support

Monday, Sep 7th	Vulnerabilities of Society and Adaptive Systems - Case study of BCP -
Tuesday, Sep 8th	Mid-term Presentation A
Thursday, Sep 10th	Mid-term Presentation B
Sunday, Sep 13th	Stakeholders and Resources: Understanding Cases through Use of Subsidiarity Framework
Monday, Sep 14th	Problems Confronted and Vulnerabilities of Subsidiarity
Wednesday, Sep 16th	Understanding Subsidiarity: Self-help, Mutual Aid and Public Support
Friday, Sep 18th	The Dialogue - Experience before and after the Earthquake

Social and Economic Value

Sunday, Sep 20th	Achieving Both Social and Economic Values
Monday, Sep 21th	Business Model Monetization and Feasibility
Monday, Sep 21th	Business Model which Creates Value and Leads to Profitability
Tuesday, Sep 22th	[Workshop] Achieving Both Social and Economic Values
Tuesday, Sep 29th	Achievements Presentation

Activities of Tohoku University

TP1 Introduction to Entrepreneur (Basic Seminar)

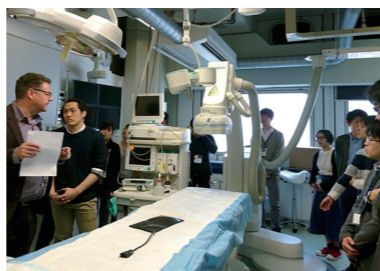
The aim is to acquire basic business knowledge and problem-solving skills while taking up social issues in the Tohoku region as subjects. We offer courses such as "Analyzing competitors from the perspective of company planners and investors" and "Let's try Social Entrepreneurship!"

TP2 Entrepreneur Challenge (Development Seminar)

We provide "Introductory Course for Entrepreneurs" consisting of basic and applied courses. The introductory course fosters entrepreneurship through workshops using virtual venues and online transactions. The applied course improves the ability to build businesses by learning how to create high-quality business plans. Business ideas are emerging, such as shopping support for older people and sports guidance using IT equipment.

TP3 Graduate School for Medical Devices

This is a short-term intensive PBL program for graduate students, the Tohoku University version of the Biodesign program. Students carry out clinical needs search, quantitative evaluation in the medical field, idea creation and prototyping for problem-solving, and business model proposal through group work. This course features the production of prototypes of medical devices that can be used in preclinical tests. We will also acquire experience of international promotion, such as in the Netherlands and Taiwan with actual machines. We also visit Delft University of Technology's incubation facility YesDelft!, to learn about its entrepreneurial development system and train mentors. Classes that are of great interest to students include medical device development theory and medical device business studies.



TP4 Japan Biodesign Tohoku Program (JBD Tohoku)

This is the Tohoku University version of the Stanford Biodesign Education Curriculum developed at Stanford University in the United States. We are implementing a human resource development program for creating medical devices based on design thinking. Every year, we invite two to four fellows to practical PBL to search for unresolved medical needs. After completion of the program, the goal is to start up a business. So far, two graduates have started a business and are working as mentors for JBD Tohoku. Based on the human network, which is the strength of the JBD, we are promoting entrepreneurship by verifying commercialization after completion (TP6).



TP4-2 Corporate Management Workshop

This is a simulation game program (held every year) in which you can experience a sense of management without taking real-world risks. We held classes inviting with Professor Yoshiki Hamada, who is the chairman of the International Simulation & Gaming Society (ISAGA), to improve our management skills.



TP5 FDC/PBL Design Studio Program

We hold design workshops to acquire the thinking and skills to generate creative ideas through projects dealing with actual issues of companies and regions. It features a collaboration by a mixed team of researchers from different fields, students and graduate students, product developers, and local creators. We have held NTT Studio, Panasonic Studio, and Nissan Studio under the name of the company providing the issue. This program is highly compatible with social entrepreneurship, which aims to create social value by fostering empathy for collaboration with experts and co-creative processes with the people in the field.



TP5-3 Finland-Oulu Partnership Program

This program develops student mindsets, design thinking, teacher facilitation and mentoring skills in collaboration with Oulu University of Applied Sciences (OAMK). Every year, we send five to ten students to Northern Europe to build an international startup education system focusing on practical social problem-solving education in Northern Europe and deepen learning about Finnish culture and education systems.



TP6 BIP Internship (I-Corps/NSF) Commercialization Verification Program

This is an educational program for students and researchers are interested in entrepreneurship. They can learn about commercialization preparation and business verification by utilizing the mechanism and open recruitment of the Tohoku University Business Incubation Program (BIP), which supports commercialization from research results. Through this program, students are dispatched (internships) to BIP and venture capital firms (VC). They can learn practical things, such as discovering research seeds, the value proposition of innovation, verification of business modeling, customer identification, market research, investment and recovery.

TP10 Design Thinking/Overseas Training

This is an experience program for international design thinking in which the students themselves share lessons on social issues in cooperation with UC Berkeley (Haas Business School, etc.) in the United States, Cambridge University in the United Kingdom, Ecole Polytechnique University in France, RWTH Aachen University in Germany, Oulu University of Applied Sciences in Finland, and Tallinn University of Technology in Estonia. In FY 2020, we were hit by a coronavirus infection and faced severe social challenges. Under the theme of this new issue of coronavirus infection, we are deepening cooperation with overseas universities and holding many workshops in series, and we are progressing our program to be a more sustainable one.



Tohoku University Start Up Garage (TUSG)

As a base for developing entrepreneurs, we carry out (i) cooperation with alumnus advisors, (ii) community-based permanent establishment, (iii) hosting of startup classes and pitch events, (iv) cooperation with VCs and financial institutions, (v) matching university seeds with companies, and (vi) entrepreneurial support by mentors.



Activities of Hokkaido University and Otaru University of Commerce

HP1 Introduction to Service Design

We will use a PBL program developed in collaboration with the University of Lapland. Students will learn problem-solving methods while emphasizing stakeholder participation and dialogue using real-life problems as subjects. We will also consider introducing programs and methods from other universities in Finland, Denmark, and other countries, and aim to accommodate existing programs of the Scandinavian type to Hokkaido University.

HP2 Career Education Program

This is a career education program making undergraduate students aware of the relationship between research and society, and prompting them to think about their career paths after graduation through PBL, including (in-house) entrepreneurship.

HP3 Global Facility Center Human Resources Development Program

This program is a device sharing unit for the purpose of effective utilization of cutting-edge equipment and devices, where we will introduce and practice advanced equipment PBL utilizing Hokkaido University's unique Global Facility Center. On top of that, we will strengthen the ability to act with entrepreneurial design thinking based on state-of-the-art science and technology.

HP4 Practical PBL Program

This is a PBL program on social issues in order to create a practical business plan and strengthen presentation skills.

1. Hult Prize/The world's largest international student entrepreneurship contest seeking innovative business plans to solve social problems facing humankind (also known as the Student Nobel Prize). In the 2019 regional qualifying round, our team won the championship, for the first time, from Japanese universities and participated in a boot camp in London.
2. DEMOLA/This is an industry-government-academia collaboration platform for innovation creation provided by DEMOLA GLOBAL (Finland). It is an international problem-solving network for corporate businesses in which 56 universities from 15 countries around the world participate, characterized by the fact that undergraduate students, graduate students, and corporate staff work together to solve real business problems. In Japan, Hokkaido University first introduced this platform in 2018, and continues to operate the program.
3. Sapporo IOT/For the "Change the World! Business Idea Contest" to be held at the end of the fiscal year, the Hokkaido University Entrepreneurship Department, which is working to start a business, develops a wide variety of ideas throughout the year and announces them to the public."



HP5 Entrepreneur-Oriented Career Education

This program is run under the collaboration with the selective special class "Nitobe College" for undergraduate students. We will carry out this program as a "career development seminar" that will help create a better future and hone the creativity of each participant. With mentors from Hokkaido University alumni and others, each participant will develop abilities for various career paths such as starting a business and going on to a doctoral course.

OP1 Business Basics I / II

This is a reverse education program for teaching the basics of business, mainly for Hokkaido University students as part of career education. This program uses teaching material for which the existing curriculum and know-how of Otaru University of Commerce was adapted for novice students, aiming to cultivate the ability to interpret and utilize complex corporate information with various analysis methods and theories. We also carry out "business game exercises" to practice various decision-making in management activities.



OP2 Special Lecture

This is a corporate problem-solving exercise using the DEMOLA program (an affiliated lecture of Hokkaido University and Otaru University of Commerce).

Activities of Miyagi University

MP1 Skill Development for Contributing to the Community (Lectures, Corporate Collaboration, and More)

The purpose of this program is to develop human resources that can create a community making the best use of the history, culture and resources of the region. Also, it looks to discover the charm of the region, disseminate it from the region to the whole country and solve problems together with the local residents. We actually visit, see, listen, experience and learn about the local site on one's own, to help students acquire the skills to make proposals for future community building, which is our goal.



MP2 Acquiring Design Skills (Lectures, Corporate Collaboration, and More)

The purpose is to develop human resources capable of solving local and social issues through life environment design, plastic product design, sensitivity information design, and more. The special feature is that the participants can acquire knowledge and skills while learning design skills such as architecture, programming, graphic design, and interior design in a cross-sectoral manner. The participants actually create furniture, architectural models, posters, and more, which may be presented to the public. Currently, we are building a system to deliver every person's ideas to wide society, and we are creating an environment where everyone can more fully appreciate the possibilities of design.



MP3 Deepening Interest in Entrepreneurship and Expanding Possibilities

By interacting with external entrepreneurs, we are working on a system in which students deepen their interest in entrepreneurship and voluntarily aim to start a business. Specifically, we have carried out the following three events (lecture discussion, DECADE+12LECTURE 01-03): 01 "Creating atmosphere" by Mr. Maeda, who runs a guesthouse introduction site, 02 "The aim of the earthquake reconstruction generation" by Mr. Sato, a university professor involved in the reconstruction of Tohoku, and 03 "The driving force of creation is not technique" by Mr. Kimura, visual creative chief director.



MP4 Acting on a Project-by-Project Basis and Confirming Your Position in Society

The skills cultivated in each program will be utilized in actual projects to familiarize participants with the skills. A bus shelter in the Osawa area of Kesenuma City was designed in the "Town reconstruction project-creating a school bus shelter". Since most residents have moved to higher ground after the tsunami damage, the central part of the Osawa area has been hollowed out. Accordingly, we have created a bus shelter in the central part of the Osawa area in collaboration with local children so that the children feel a sense of attachment to it. At the "Marche event utilizing the flooded area," we held a Marche event in the flooded area as part of activities supporting residents with limited access to shopping facilities after the earthquake.

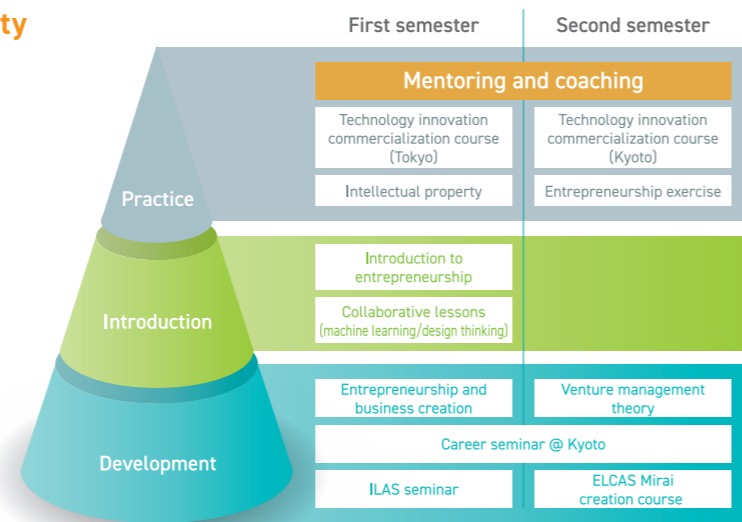


Activities of Kyoto University

Entrepreneur Education at Kyoto University

At Kyoto University, we are actively challenging ourselves to create new values in all fields of society and working to develop entrepreneurial human resources aiming to realize their original dreams.

Courses are set for each difficulty level according to the level of commitment of participants to start a business, covering from entry level to the actual launch. Participants' curiosity and Intrinsic Motivation are extremely important because entrepreneurship involves exploration activities in uncharted worlds. We emphasize PBL over knowledge transfer as a way to provide intrinsic motivation. Throughout the program, we emphasize three aspects: "Autonomy" (participant's self-reliance and active participation), "Relatedness" (involvement in the society and merit for the society), and "Competence" (full utilization of valuable research results and success in the competitive business world).



Overview of the Entrepreneur Education Program

We currently offer 12 courses in 8 categories.

- "GTEP Catapult" that supports financing from VCs through mentoring and coaching. (KP4/Module D2)
- Commercialization PBL "Technology Innovation Commercialization Course" (held in Tokyo/Kyoto) for undergraduates, graduate students, working adults, researchers, and more.
- Graduate school common courses "Introduction to Entrepreneurship", "Entrepreneurship Exercise" and "Intellectual Property"
- University-wide common course "Innovation and Economic Society" (ILAS Seminar)
- Entry programs "Entrepreneurship and Business Creation", "Venture Management Theory", "Career Seminar @ Kyoto" (KP1/Module E)
- High school-university connection program ELCAS "Mirai (Future) Creating Course"
- Collaboration program of irregular intensive lectures on such as AI and design thinking (approximately one week) provided in collaboration with overseas organizations (KP2/Module A2)
- KUEP (Kyoto University Entrepreneur Platform) Prototyping using digital fabrication tools, conducting various meetups, and supporting students' voluntary activities.

Entrepreneurs and award winners from those attending the course

~30 Startups 2014-2018



Awards



KP4 GTEP Catapult (Module D2)

Several mentoring sessions are held for groups of undergraduates, graduate students, working adults, researchers, and others planning to start up business based on science and technology in order to support them until they can raise funds from outside (for VC and the like). We invite different mentors, such as venture capitalists, entrepreneurs, and specialists on intellectual property and M & A, to each session, aiming to train future entrepreneurs through several panel sessions.

- Candidates are selected from Kyoto University entrepreneurial PBL program graduates or ECC-iCap registrants, totaling 3 to 4 companies (groups) each time.
- Prototyping by utilizing KUEP equipment
- Interaction with other startups
- Gap fund and incubation fund acquisition support

KP1 Entry Program (Module E)

We offer three introductory level courses, mainly for undergraduate students.

- Entrepreneurship and business creation** | Students who have no knowledge of business or economics can efficiently learn about the big picture of entrepreneurship and business.
- Venture management theory** | Assuming that the participants will start a venture business, create a company, grow it, and list the stock on the market, they will acquire a wide range of knowledge necessary for overall corporate management.
- Career seminar** | Traditionally, large corporations and government offices were the career paths of Kyoto University students. We hold career seminars inviting entrepreneurs to expand the range of career choices for students and expand the number of people who are interested in entrepreneurship.

Activities of Kobe University

K1 Creative School (Basic)

Students learn the concepts necessary for solving problems with bad definitions (unclear initial state or target state), bad structures (unclear solution means) and bad settings (optimal solution is not set to be the only solution) in group work. Specifically, they learn logical thinking, systems thinking and design thinking, in addition to learning how to follow the problem-solving process while communicating with others.

K2 Creative School (Advanced)

We provide problem-solving learning that deals with real-world problems. We use fieldwork to explore the problems faced by companies or local governments to discuss solutions and values thereof. We will inculcate entrepreneurs who can acquire knowledge in finance to implement values in society and create more practical businesses.



K3 Intrapreneurship Workshop

Workshops will be held in order to examine new projects using logical thinking, design thinking and systems thinking. These "Intrapreneurship" (in-situ) workshops will be conducted for undergraduate students, graduate students and young researchers, together with working adults, aiming to build a cross-sectional human network.

Hult Prize @Kobe University

We organize the Hult Prize campus competition, one of the world's largest student competitions. It supports the business of students who solve social problems. University students from all over the world compete for the prize money of US\$1,000,000.



Kobe University Creative Dojo

Creative Dojo was started in April of 2016 as a place where many researchers get together and collaborate, talk about the facts and conduct analysis, all in the interest of realizing a better society. The Dojo provides a place for producing "collective intelligence" for researchers.



V.School

Kobe University's V. School: Aiming to be a Global Hub for Value Creation

Established in April 2020, Kobe University's 'Value School' (V. School) aims to inculcate talented people who can create value by discovering, realizing and elaborating upon underlying 'hopes and expectations' beyond existing seeds/needs. It is not an independent body or department, but rather a university-wide cross-departmental organization that students can freely join. V. School exists beyond the boundaries of faculties and graduate schools, reflecting and making the most of Kobe University's tradition of integrating the arts and sciences.

