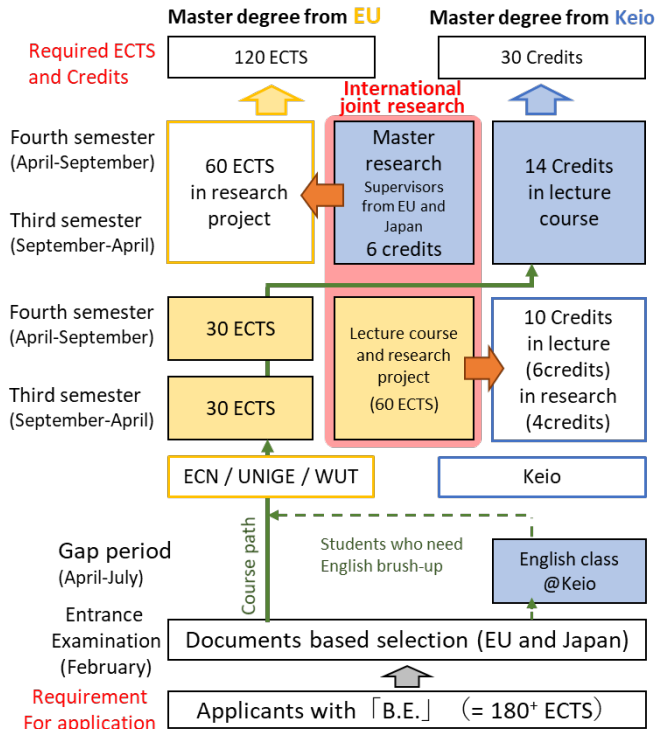


FY2019 Inter-University Exchange Project Keio University

EU-Japan Joint Master Program

【Name of project】(Adopted year: FY2019)
Japan-Europe Master on Advanced Robotics – JEMARO

【Summary of Inter-University Exchange Projects】



JEMARO Consortium

Regular meeting

- Selection of applicants at joint meetings
- Planning and presentation of international joint research topics
- Information exchange and update of mutually complementary lecture lists
- Consider new recruitment strategies for the world
- International joint research progress presentation by registered students
- Exchange of opinions with registered students and feedback to the program

【Summary of Exchange program】

Robotics is a key technology for future development of industry field and social infrastructure in Europe and Japan. Moreover, it is expected that robotics technology is applicable to important fields such as smart cities, smart homes, automated driving, medical robots, entertainment, rescue, human support, and transhumanism. There is no doubt that the development of human resources in advanced robotics fields will be required worldwide. Therefore, in the proposed JEMARO program, three European universities and one Japanese university, that is, Ecole Centrale de Nantes in France, University of Genoa in Italy, Warsaw University of Technology in Poland and Keio University in Japan provide their respective resources for excellent education program, which is not possible individually in each university. The purpose of JEMARO is to develop next-generation of advanced robotics engineers and to produce people useful for not only industry but also future society by creating an educational research system and collaborating with partner companies in each country.

【Global Human Resource on the project】

- Global engineers who understand the background of different cultures and play an important role in international joint projects
- Engineering manager with advanced expertise to understand the field comprehensively

【Feature on the project】

The JEMARO program has the following remarkable features.

- International joint research oriented curriculum
- Provision of interdisciplinary fundamental subjects (compulsory) and highly specialized subjects (elective) on robotics
- Provision of research topics, lectures, internships, and career paths after completion by partner companies
- One year stay in at least one European country and Japan

【Exchange number】

	2019	2020	2021	2022	2023
Outbound	0	2	4	4	8
Inbound	0	0	14	12	12

1. FY2019 Progress

【Name of project】(Adopted year: FY2019)

Japan-Europe Master on Advanced Robotics - JEMARO

■ Exchange Programs



The program was adopted in September 2019 and various systems are under construction to prepare for the full-scale dispatch and acceptance of students from the 2020 academic year.

After a rigorous screening process, 14 candidates were selected out of 433 at a joint selection meeting with EU partner universities in March. The JEMARO Students Exchange Laboratory for the participants of this program has been set up in the university, and facilities are being upgraded to enable students to communicate and conduct research from the next academic year, as well as to conduct web conferencing freely at any time.

〈inside of the JEMARO Student Exchange Laboratory〉

Student-Mobility

○ Outbound

No outbound student. Fiscal year 2019 is a preparation period for the program and the first outbound student will be sent in September, 2020.

○ Inbound

No inbound student. Fiscal year 2019 is a preparation period for the program and furthermore in the first year as they will be enrolled in one of the three European universities.

	2019	
	Plan	Results
Outbound	0	0
Inbound	0	0

■ Forming the University Network with Quality Assurance

The aim of the program is to establish a joint research system based on research activities of the three EU universities and the Graduate School of Science and Technology, Keio University, with the aim of fostering researchers who can co-author dissertations. The selection process is based on an entrance examination for the International Graduate Program on Advanced Science and Technology.

The quality of students from European universities is also guaranteed by improving and implementing the selection process of the EMARO (European Master on Advanced Robotics), in which Keio University has participated as an associate partner. Finally, accepting JEMARO students are determined according to the common screening criteria established by the JEMARO consortium. A joint web conference was held on March 6, 2020 to decide on the students to be accepted and to discuss policies for implementing the program while maintaining the quality of education affected by COVID-19.



〈The subject of the Joint Web Conference on March 6, 2020〉

■ Promotion of Student-Mobility Environment

For international students, we introduce them dormitories and housing, provide them with information on living conditions, and have a support system of TAs so that they can concentrate on their studies in Japan. For outbound students, we work closely with the host university to provide information about the institution and basic information on the host country so that they can concentrate on their studies in the host country.

■ Internationalization of the university, Information disclosure and Publication of outcome

We released a brand-new website for JEMARO (in Japanese <https://jemaro.st.keio.ac.jp/>) and swap links with the English site at ECN (<https://jemaro.ec-nantes.fr/>) and enhance the disclosure of information mutually. Keio University has been selected as a platform-building university among one of the three Inter-University Exchange Project and there are plans to hold meetings and symposia to exchange opinions among the selected universities.

■ Good Practices

Monthly web meetings of JEMARO Consortium members have been held to minimize program changes due to the COVID-19 infection and to share information. In addition, a consortium Web meeting was held on March 6, 2020, which is planned to be held in March and July of each year.

2. FY2020 Progress

【Name of project】(Adopted year: FY2019)
Japan-Europe Master on Advanced Robotics - JEMARO

■ Exchange Programs



〈The first JEMARO students from overseas arrived in ECN (France)〉

The student exchange program began in 2020; however, due to the spread of the COVID-19 (coronavirus disease), students in Japan were not able to travel to Europe in the 2020 academic year. For Japanese students, all lectures and research activities, and for students in the EU, portions of lectures and research activities, were implemented online. Even under such circumstances, the number of applicants for the entire program increased by nearly 100 people from the previous year, and a joint selection committee with EU partner universities was held in March. Eighteen candidates were selected out of 527 applicants (including 2 Japanese students) through a rigorous screening process. Based on the knowledge gained from the exchange program during the COVID-19 pandemic, a symposium was held in March for a wide target audience beyond just the selected universities.

Student-Mobility

○ Outbound

Initially, five students were selected to join the program from September 2020, but two declined due to the coronavirus pandemic. The remaining three students (one enrolled at a university in France and two enrolled at university in Italy) took part in the program online from Japan.

○ Inbound

The first year of the two-year program is conducted at one of three European universities and Keio did not host any international students in 2020 as originally planned. In September 2021, Keio will receive nine EU students.

	2020	
	Plan	Results
Outbound	2	3
Inbound	0	0

■ Forming the University Network with Quality Assurance

From the very beginning of the selection process, we place a high value on the students' motivation and interest in research topics, selecting their academic advisors in Japan before their departure. We have established a system that allows students to engage in research under the supervision of both Japanese and European academic advisors even before arriving in Japan. Based on cooperation with our EU partner universities, we have assigned Japanese instructors for both the first (12 students including 3 Japanese nationals) and second cohorts (18 students including 2 Japanese nationals), ensuring that students have a clear indication of the joint supervision system that will be in place.



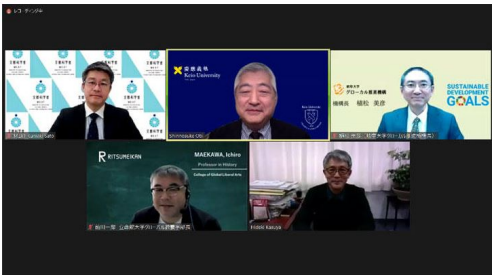
JEMARO video (English version)

〈JEMARO video (English version)〉
<https://www.youtube.com/watch?v=TlIaXpe5ByQ>

■ Promotion of Student-Mobility Environment

The "Guide for Before Departure and Upon Arrival 2021" was distributed online to international students coming to Japan for the first time. This guide covers essential information regarding dormitories, visa procedures, living information, etc., and helps students to prepare both for their trip and settling into a new environment. In addition, for Japanese students who could only join the program online, we designed and conducted the "JEMARO Program Specialized Academic Skills English Training" to help them improve their discussion and presentation skills in English.

■ Internationalization of the university, Information disclosure and Publication of outcome



〈From the first part of the symposium "Toward the Establishment of the Joint Degree Program Council"〉

As the platform-building university among the three universities selected for the Inter-University Exchange Project (EU), we held liaison meetings for the selected universities (the first meeting was held in July and the second in March) as well as hosting several meetings to share information on handling student mobility. In March, Keio also hosted a two-part online symposium titled "Toward the Establishment of the 'Council for Joint Degree Programs'" (in Japanese) and "The realities of managing international programs during the coronavirus pandemic" (in English). (<https://www.global-sdgs.keio.ac.jp/sdgs/iuep-eu-symposium/>) Two JEMARO introductory videos, one in Japanese and one in English, were produced and widely publicized on the EU and Japanese JEMARO websites.

■ Good Practices

At the same time as establishing a research and education guidance system, we focused on producing public relations materials (enhancement of introductory videos and websites) for student recruitment. As a result, the number of applicants increased by nearly 100 people, and the number of JEMARO search hits on Google reached 141,000 (as of June 28, 2021), which is a credit to the increased publicity.

【Name of project】(Adopted year: FY2019)
Japan-Europe Master on Advanced Robotics - JEMARO

■ Exchange Programs



〈JEMARO DAYS Opening Screen〉

Due to the effects of the COVID-19 pandemic, exchange programs between Japan and Europe continued to be held online as they were in the previous academic year. However in September, Keio was able to send two Japanese students to Europe, enabling the students to participate in person for their exchange programs in their respective host countries, the first time since the pandemic began. A third round of applications was held. The overall number of applicants for the program surpassed the previous year by nearly 350 students. A joint selection meeting was held with EU partner universities in March. 23 students (including 3 Japanese students) were selected from 873 applicants after a rigorous screening process. In addition to classes and research at the university, Keio held "JEMARO DAYS" online for two days in September. Seminar events were held for JEMARO students, inviting lecturers from companies.

Student-Mobility

○ Outbound

In September 2021, two students were dispatched (one to France and one to Italy), the first time that students were sent abroad since the onset of the pandemic. Keio was able to secure these students' participation the fact that the application period for the program overlapped with an international travel advisory issued by the Ministry of Foreign Affairs, and the Japanese government had declared a state of emergency.

	2021	
	Plan	Results
Outbound	4	2
Inbound	14	9

○ Inbound

Nine students were accepted as intake-1 and joined in September of 2022 (ten students withdrew due to effects of the COVID-19 pandemic). Due to immigration restrictions, the students ended up taking classes and receiving instruction online while in their home countries or in the countries where they lived during the first year of their programs. Exchange students are scheduled to enter Japan as admitted from April 2022.

■ Forming the University Network with Quality Assurance

The "Inter-consortia meeting about EMJMDs joint degree and EA" was held in November. Six European universities from France, Italy, Poland, Germany, and Romania, and three universities from Japan held discussions to introduce their approaches to accreditation and quality assurance for joint degrees, effectively deepening mutual understanding toward the establishment of joint degrees.
(<https://iuep-eu.keio.ac.jp/council/20211116/>)

■ Promotion of Student-Mobility Environment

We distributed the JEMARO Course Guidebook 2021 to students who plan to study at Keio University starting in September, and answered questions about how to register for courses, the number of required credits, the master's thesis review, etc., to help inbound students prepare for their studies. In August we held the JEMARO Program-Specific Academic Skills English Training for Japanese intake-2 students just prior to their departure. The training was aimed at improving their discussion and presentation skills in English.

■ Internationalization of the university, Information disclosure and Publication of outcome

As the platform-building university selected for the Inter-University Exchange Project (EU), we hosted four meetings to exchange information among participating universities in which we discussed progress of the program. In March, we held a symposium on the theme of "Quality Assurance in Japan-EU International Collaborative Degree Programs," as part of the Inter-University Exchange Project: Symposium for Strategic Cooperation and Support for Higher Education. Speakers from the European Education and Culture Executive Agency (EACEA) gave lectures on trends in quality assurance in Europe, and the event featured a panel discussion on essential issues about how transnational "joint" degrees should be evaluated.
(<https://www.global-sdgs.keio.ac.jp/sdgs/20220323/>).



〈the Inter-University Exchange Project: Symposium〉

■ Good Practices

We worked on branding for the platform-building project to enhance its capacity to circulate information. A specialized contractor took the lead in interviewing officials from the three participating universities, conducting workshops, and developing a shared logo and key messages. We redesigned the website to reflect these developments.



〈Platform-building Project website〉

4. FY2022 Progress

【Keio University】

【Name of project】(Adopted year: FY2019)

Japan-Europe Master on Advanced Robotics - JEMARO

■ Exchange Programs



〈 January: Presentation for Independent Study〉

The actual travel to Japan became possible for intake-1 students in April 2022. After presenting their master's thesis defense in July, students successfully completed the program in September 2022, receiving degrees from both Keio and EU university. In addition, 16 intake-2 students arrived in Japan in the same month.

As for the Japanese students, 2 intake-2 students completed their first-year curriculum and returned to Japan as scheduled. This was followed by 3 students from intake-3 who went to Europe in September.

A fourth round of applications was held. In March, a joint selection meeting was conducted with EU partner universities. 24 students (including 8 Japanese students) were selected from 852 applicants after a rigorous screening process.

Student-Mobility

○ Outbound

The 2 Japanese students from intake-2 departed Japan in September 2021 (one to France and one to Italy). In September 2022, 3 intake-3 students were sent to their respective destination countries (two to France and one to Italy) to study for one year.

○ Inbound

The 9 intake-1 students who had participated in the program online were finally able to enter Japan in April 2022 due to the easing of entry restrictions. All completed the program in September. The 16 intake-2 students were from nine countries, including the US and Asian countries, as well as the EU, arrived in Japan in September 2022.

	2022	
	Plan	Results
Outbound	4	3
Inbound	12	16

■ Forming the University Network with Quality Assurance

The second "Inter-consortia meeting about EMJMDs joint degree and EA" was held in July. Personnel from six universities in Europe—France, Italy, Poland, Germany, and Romania—and three Japanese universities participated. The accreditation body introduced the process and evaluation criteria of the European Approach (EA), and a delegate of the Erasmus Mundus International Master's Programme introduced its implementation and their experience in EA. The participants were able to deepen their mutual understanding of joint international degree accreditation and quality assurance.

■ Promotion of Student-Mobility Environment

We distributed the "JEMARO Course Guidebook 2022" to help inbound students prepare for their studies. In addition, the "JEMARO Room", which can be used only by students participating in the program, was set up to provide an environment in which they can freely interact with each other. In August, English training for Japanese intake-3 students were held to improve their discussion and presentation skills in English.

■ Internationalization of the university, Information disclosure and Publication of outcome

As a platform-building university, we confirmed progress via four liaison meetings held for the purpose of sharing information among participating universities. In October, we held a symposium on the theme of "Implementation and Practice of the Japan-EU International Collaborative Degree Programs", as part of the Inter-University Exchange Project: Symposium for Strategic Cooperation and Support for Higher Education.

The two-part symposium featured presentations by speakers from the European Education and Culture Executive Agency (EACEA) and France's High Council for Evaluation of Research and Higher Education (HCERES), as well as two examples of prior EU-Japan JDPs. During the panel discussion, which included a question-and-answer session, there was a lively discussion on quality assurance for international joint programs. <https://www.global-sdgs.keio.ac.jp/en/sdgs/20221007/>



〈the Inter-University Exchange Project: Symposium〉

■ Good Practices

The program included a two-week course consisting of intensive lectures by the deputy director of the CNRS-AIST Joint Robotics Laboratory. Students visited the Tsukuba Center of the National Institute of Advanced Industrial Science and Technology (AIST) in June, participated in the 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2022) in October, and visited two other robotics-related companies. This provided students with exposure to cutting-edge research and opportunities to expand their personal networks.



〈 JEMARO students at the IROS 2022 in Kyoto〉

【Name of project】(Adopted year: FY2019)

Japan-Europe Master on Advanced Robotics - JEMARO

■ Exchange Programs



〈Intake-2 students holding their diplomas〉

- 18 intake-2 students successfully completed their master's thesis defence and graduated in September 2023, obtaining degrees from both the European partner universities and Keio University. In the same month, 19 intake-3 students arrived in Japan, completed their Independent Study presentations in January 2024, and are continuing their research. Keio successfully met its goal of sending 8 outbound students for intake-4. The selection process for the intake-5 was conducted in collaboration with EU partner universities and resulted in 6 students from Keio being selected to go abroad.
- 4 faculty members from the EU partner universities were invited to Japan, and 6 faculty members from Keio were sent to Europe. Their activities included seminars, laboratory visits, and evaluations of thesis presentations. We put together research introduction videos by the supervisors, and increased exchanges between them with the goal of improving the joint supervision system.
- We sent students to international conferences and events related to robotics (IFTOMM World Congress 2023, Mechatronics & AISM 2023, and the 2023 International Robot Exhibition). Keio also connected with industry partners through visits to robotics-related companies.

Student-Mobility

○ Outbound

From September 2022 to August 2023, 3 intake-3 students went abroad (2 to France and 1 to Italy) and are now in their second year of studying in the program in Japan. Beginning in September 2023, 8 intake-4 students went abroad for year-long programs (3 to France, 3 to Italy, and 2 to Poland), marking the first students sent to the Warsaw University of Technology.

	2023	
	Plan	Results
Outbound	8	8
Inbound	12	19

○ Inbound

In September 2023, 19 students from 12 countries throughout the EU, South America, and Asia, came to study in Japan for the third cohort. Additionally, all 16 intake-2 students finished their program in September 2023 after successfully completing their master's thesis presentations in July.

■ Forming the University Network with Quality Assurance

- Joint management meetings of the consortium comprising 4 Japanese and European universities were held 4 times both in person and online, to ensure the reliable operation and continuous improvement of the program.
- The JEMARO Quality Committee was established to maintain and improve the quality of the exchange program. Materials demonstrating past activities have been compiled and 3 external evaluators with a focus on Japan-EU relations and industry provided an objective assessment of the program. Their assessment confirmed the quality of JEMARO as an international joint master's degree program with a total of 78 students participating in it from 2019 to 2023, including 16 students from Keio.

■ Promotion of Student-Mobility Environment

- The “Student Agreement” and “Student Handbook”, which explain the process from mutually awarding and recognizing credits to the conferral of degrees, were made available on a website for prospective students. Additionally, the “JEMARO Course Guidebook 2023” was distributed to help inbound students prepare for their studies.
- Upgrades were made to the shared computers in the “JEMARO Room” to maintain an environment conducive to student interaction and learning. English training for Japanese intake-4 students were held to improve their discussion and presentation skills in English.

■ Internationalization of the university, Information disclosure and Publication of outcome

- As a platform-building university, we held two liaison meetings and information exchange sessions with other participating universities, discussing program details, presentations at international conferences, and project reports.
- Organized sessions at two international conferences attended by international education officials to report on the knowledge and outcomes gained through JEMARO and platform-building projects. At EAIE 2023, the differences between Japan and Europe in the establishment and quality assurance of joint degree programs were explained by representatives from ECN, WUT, and Keio. At APAIE 2024, the progress in development of international joint degree programs between Japan and Europe was presented together with the representatives from HIPS and JEMARO.
<https://jemaro.st.keio.ac.jp/uep-eu/activity/> (available in Japanese)



〈Presenting members at EAIE 2024〉

■ Good Practices

- JEMARO Days, attended by the students, graduates and company representatives were held face-to-face. Students and alumni who attended worked in teams during a three-day robotics contest, allowing them to apply the specialized knowledge they had gained through JEMARO and collaborate with teammates from diverse backgrounds.
- A survey among Japanese outbound students was conducted, finding that they had gained a broad and practical understanding of robotics, international perspectives, and communication skills through interactions with diverse students. Their career aspirations also showed a stronger inclination towards international careers.
- To support ongoing efforts, five interview videos were created and published.



〈JEMARO students participating in the IFTOMM World Congress〉