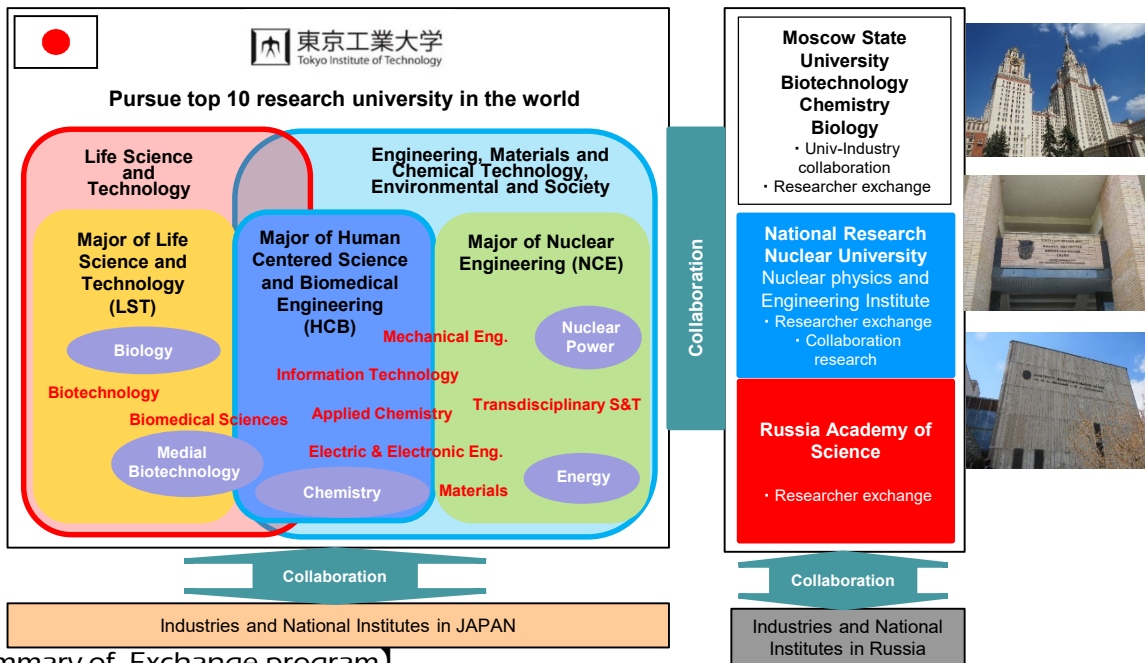


【Name of project】(Adopted year: FY2017, (Type A Russia))

Nurturing leader scientists and engineers for healthcare, medical, nuclear power, and energy industries between Japan and Russia

【Summary of Project】

The project fosters researchers and engineers capable of global leadership in the healthcare and medical sectors, and the nuclear power and energy industries, through collaboration between Tokyo Institute of Technology and Russian institutions including Moscow State University and the National Research Nuclear University, with the goal of nurturing young engineers who can contribute to Japan-Russia industrial development in the fields of nuclear engineering, environmental science, medical engineering and biotechnology.



【Summary of Exchange program】

Building on previous exchanges between Japanese and Russian universities, academic exchange between Japanese and Russian students will be actively promoted through a program to send Tokyo Institute of Technology undergraduate and graduate students on short-term and long-term visits to Russian universities, and welcome undergraduate and graduate students from Moscow State University and the National Research Nuclear University on similar visits to Tokyo Institute of Technology. In addition, a student exchange forum will be conducted, providing opportunities for many more Japanese and Russian students to participate even if they have not been involved in exchanges.

【Global Human Resource on the project】

This project develops participants to be: (1) leading researchers and engineers capable of global activity on the future world stage through major contributions to the healthcare and medical sectors, and the nuclear power and energy industries, in Japan and Russia; (2) people with international, social and communicative competence to serve as bridges between Japan and Russia, and who go on to be capable of also constructing collaborative relationships with other countries in the world; (3) highly-skilled people who possess cutting edge specialist knowledge, skills and experience in engineering, and can demonstrate international leadership.

【Feature on the project】

This project actively promotes academic exchange between Japanese and Russian universities, and nurtures young engineers in both countries who can contribute to the future growth of Japanese-Russian collaborative industrial development. This is achieved mainly through collaboration among three different courses at Tokyo Institute of Technology – Human Centered Science and Biomedical Engineering, Nuclear Engineering in Interdisciplinary Research and Education, and Life Sciences and Technology for life science engineering – implementing student exchange with the top two universities in Russia in the field of transdisciplinary engineering.

【Exchange number】

	2017	2018	2019	2020	2021
Outbound	10	15	15	15	15
Inbound	10	15	15	15	15

1. FY2017 Progress

【Tokyo Institute of Technology】

【Name of project】(Adopted year: FY2017, (Type A, Country Russia)

Nurturing leader scientists and engineers for healthcare, medical, nuclear power, and energy industries between Japan and Russia

■ Exchange Programs



〈 The 1st Japan-Russia Student Exchange Forum 〉

Sufficient discussion in was held with Moscow State University (MSU) and the Russian National Research Nuclear University (MEPhI) on understanding of the purpose of this project and collaboration for project implementation. Based on the discussion above, the following activities were successfully implemented in FY2017.

- Short term (2 weeks) dispatch of Tokyo Tech students to MSU and MEPhI.
- Short term (2 weeks) acceptance of MSU and MEPhI students to Tokyo Tech.
- Holding the 1st Japan-Russia Student Exchange Forum with participation of students and professors of Toyo Tech and MSU and MEPhI.

Student-Mobility

○ Outbound

Eight students were dispatched to the MSU (Dept. of Chemistry and Dept. of Biotechnology) and three students were dispatched to MEPhI (Institute of Nuclear Physics and Engineering)

○ Inbound

Seven from MSU and four students from MEPhI were accepted to Tokyo Tech.

	2017	
	Plan	Results
Outbound	10	11
Inbound	10	11

■ Forming the University Network with Quality Assurance

○ Quality assurance of exchange programs

GPA (Grade Point Average) and TOEIC scores were taken into consideration for student selection. Also, since this program aims to exchange research, students were imposed both oral presentations and poster presentations.

Regarding the content of the exchange program, both faculty members of Japan and Russia exchanged their opinions on the implementation details and reflected them in the program



〈 PBL type training 〉

■ Promotion of Student-Mobility Environment

○ Improvement of environment for accepting foreign students

Various procedures of accepting students were supervised in this program office. This office has also responded directly to individual students' questions about visit to Japan. Also, for actual acceptance, faculty member and supporting students were accompanied the exchange students so that exchange students could concentrate on the program effectively.

○ Improvement of environment for dispatching Japanese students

All procedures necessary for dispatching were carried out by faculty member and administrative staff, and smooth dispatch was carried out. Also preliminary explanation was given to the students. Students were able to concentrate on the contents of the program due to the accompanying faculty member.

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

○ Internationalization of universities due to implementation of projects

In the student exchange program, there were some programs (eg, research presentations, PBL type training, etc.) in which not only students who were dispatched and accepted but also other students from both Russia and Japan had participated. As a result, it contributed to the promotion of international exchange with higher ripple effect.

○ Method and structure of information provision to domestic and overseas

The website of this project (Japanese, Russian, English) was created, so that necessary information can be clearly obtained from abroad. Also, a recruitment pamphlet (Japanese, Russian) for students of this project was created and will be used in the future for recruitment and public relations.

■ Good Practices

○ Holding the Russo-Japan Student Forum

As Russian faculty members participated, they began to have high awareness of participation in this project. Also all participating university members were able to meet together. As a result, it contributed to fostering a sense of unity. In addition Face-to-face meeting with professors from Russian universities could be carried out.

○ Student visits to companies and external organizations

Students visited Rosatom, Ajinomoto-Genetika Research Institute in Russia, visited Yokohama City University Medical School, Ajinomoto Inc. and Oarai Research Center of JAEA in Japan to absorb multifaceted knowledge.

2. FY2018 Progress

【Tokyo Institute of Technology】

【Name of project】Nurturing leader scientists and engineers for healthcare, medical, nuclear power, and energy industries between Japan and Russia (Adopted year: FY2017, (Type A, Country Russia))

■ Exchange Programs



〈 1st. International Bio Tournament 〉

The project operation system was well established with Moscow State University (MSU) and Russian National Research Nuclear University (MEPhI). As a result of close meetings and coordination among the instructors in charge, we could conduct more effective programs based on the activities of FY 2017.

In the short-term dispatch and acceptance, all workshop-type discussions and tournament-type debates were conducted in a mixed group of Russian students and our students. As a result, exchange among students was extremely active.

In long-term dispatch and acceptance, students concentrated on research at the visiting laboratory. The obtained actual academic results led to the submission of academic journal and presentation at academic conferences.

Student-Mobility

○ Outbound

Ten students were dispatched to the MSU (Short-term: 8<Sept.16-29>, Long-term :2 <Sept. 18-Dec.15>.)

Five students were dispatched to the MEPhI

(Short-term: 4<Sept.16-19>, Long-term :1 <Sep. 16-Dec.12>.)

○ Inbound

Ten students were accepted from MSU (Short-term: 8<Feb. 12-24>,

Long-term :2 <Oct. 5-Feb. 16,23>.) Five students were accepted from

MEPhI (Short-term: 4<Mar. 5-20>, Long-term :1 <Dec.13-Mar 26>)

	2018	
	Plan	Results
Outbound	15	15
Inbound	15	15

■ Forming the University Network with Quality Assurance

In order to enable actual research collaboration, GPA (Grade Point Average) and TOEIC scores were taken into consideration for student selection. In long-term exchange, conducting effective prior discussion of the research contents and carrying out the research had led to the creation of academic results. Even in short-term, students were required to make oral and poster presentations. The students also assigned to each laboratory and conducted experiments. These activities resulted in a high quality exchange program.



〈 Group workshop discussion 〉

■ Promotion of Student-Mobility Environment

○ Improvement of environment for accepting foreign students

Various procedures of accepting students were supervised in this program office. Also, faculty members and supporting students were accompanied the exchange students so that exchange students could concentrate on the program effectively. In addition to recommending foreign travel insurance, we applied for disaster and accident insurance for long-term students.

○ Improvement of environment for dispatching Japanese students

All procedures necessary for dispatching were carried out by faculty members and administrative staff, and smooth dispatch was carried out. Also preliminary explanation was given to the students. Students were able to concentrate on the contents of the program due to the accompanying faculty members

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

Information of the project activities is disclosed on the project website (Japanese, English, Russian). This project and "The 1st. International Bio Tournament" were certified as "Event of Japan Year in Russia" by the Japanese Embassy in Russia. Especially, we became the first foreign university to participated in the Bio Tournament in Russia, and we were able to inform our project to the outside. In addition, our institute was invited to an international forum (Oct. 18, at Russian Embassy in Japan) hosted by the Russian Foreign Ministry and Russotrudnichestvo. At that time, a lecture was given on the activities of our project to raise awareness of our project.

■ Good Practices

(1) In consideration of the collaboration with us, MSU planned and carried out "The 1st International Bio Tournament" (English debate session) in which our students participated. Our students participated in three mixed teams with MSU students. Through many discussions with MSU students in preparation, one Japan-Russia team won the 3rd place.

(2) In the long-term exchange program, MEPhI dispatched Tokyo Tech student has obtained good research results. He made oral presentation at "The 14th. International Scientific and Practical Conference in Russia" and received an award for excellence. The accepting student from MEPhI gave both oral and poster presentations at "The Annual Meeting of Atomic Energy Society of Japan in March." In addition, one student from MSU created very high research results. The results has been submitted to the peer review journal as a coauthored paper with Tokyo Tech.

3. FY2019 Progress

【Tokyo Institute of Technology】

【Name of project】Nurturing leader scientists and engineers for healthcare, medical, nuclear power, and energy industries between Japan and Russia (Adopted year: FY2017, (Type A, Country Russia))

■ Exchange Programs



〈 Result Presentation 〉

The project operation system has been well developed with the cooperation among Tokyo Tech, Moscow State University (MSU), and Russian National Research Nuclear University (MEPhI). As a result of intense meetings and coordination among the instructors, we have been conducting more effective programs based on the activities of FY 2017 and 2018.

In the short-term dispatch and acceptance programs, workshop-type discussions and tournament-type debates were conducted with a mixed group of Russian and Tokyo Tech students. It helped to make close relationships among students. In long-term dispatch and acceptance programs, students concentrated on research at the host laboratory and learned the differences of the method between Japan and Russia based on the research themes.

Student-Mobility

○ Outbound

10 students to MSU (8 Short-term:15-28 Sept., 2 Long-term:3 Sept.-29 Nov. and 8 Sept.-22 Nov.),

5 students to MEPhI (4 Short-term:8-22 Sept., 1 Long-term:29 Nov.-19 Feb.)

○ Inbound

10 students from MSU (8 Short-term:10-23 Feb., 2 Long-term:4 Oct. -27 Dec. and 4 Oct.-22 Jan.),

5 students from MEPhI (4 Short-term: 13-28 Feb., 1 Long-term: 5 Dec.-4 Mar.)

	2019	
	Plan	Results
Outbound	15	15
Inbound	15	15

■ Forming the University Network with Quality Assurance

In order to conduct a practical research collaboration, GPA (Grade Point Average) and TOEIC scores were taken into the consideration to select students for programs.

In the long-term exchange program, having a discussion regarding the individual research prior to a visit, it brought academic achievements in effect. Short-term program students were required to make oral and/or poster presentations. Each student was assigned to different laboratories and conducted experiments as well as long-term students do. It made students self-motivated and vitalize the activity.



〈 Poster Session 〉

■ Promotion of Student-Mobility Environment

○ Improvement of environment for accepting foreign students

All procedures for accepting students have been managed by the admission office of the project in Tokyo Tech. The exchanged students had faculty members and Tokyo Tech students to be taken care of so as to concentrate on the program and do their research effectively. Having a overseas travel insurance was recommended, long-term program students were required to join the disaster and accident insurance and the personal liability insurance for students which all Tokyo Tech students are required.

○ Improvement of environment for dispatching Japanese students

All procedures have been carried out by faculty members and administrative staff of the project in Tokyo Tech for secure dispatching process. At the orientation preliminary arranged before leaving, matters focused on safety and health aspects in Russia were informed to the students and joining the overseas travel insurance was required. Some period of long- and short-term program was set to be coincided so that faculty members who have experiences of living in Russia accompanied the students to guide practically .

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

Information of the project activities has been disclosed on the website available in Japanese, English and Russian.

One of our long-term exchange students visited Tokyo Tech last year from MSU applied her paper to the academic journal and published this year (Biochemie, vol. 170,p49-56, 2020). Another long-term exchanged student from MEPhI planed to have a presentation at the Annual Meeting of Atomic Energy Society of Japan this March but canceled due to the spread of the new coronavirus infection. Acknowledgments for the support by the project have been published in the journal and the proceedings of the academic meeting.

■ Good Practices

Based on the student exchange program, (1) the agreement for scientific and educational cooperation was signed between MSU and Tokyo Tech on 24 Sept., (2) the national cooperative program by Japan and Russia, International cooperative decommissioning research, has been started, (3)Tokyo Tech was adopted by MEXT for the Japanese Government Scholarship program offers to international students including Russia and the Commonwealth of Independent States.

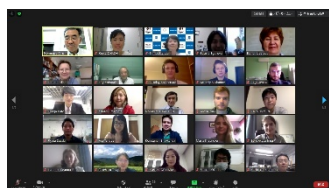
At the debate contest for university students, the 2nd International Student BioTournament, held at Faculty of Biotechnology of MSU (Pushchino City) on 26 and 27 Sept., students from Tokyo Tech and MSU made three joint teams and one of them (Team name: Six Samurai) won the second prize. Also, a Tokyo Tech student of Six Samurai received The Best Individual Award.

4. FY2020 Progress

【Tokyo Institute of Technology】

【Name of project】Nurturing leader scientists and engineers for healthcare, medical, nuclear power, and energy industries between Japan and Russia (Adopted year: FY2017, (Type A, Country Russia))

Exchange Programs



Group photo of 4th joint forum

In previous years, we have conducted student exchange programs with Moscow State University (MSU) and the National Research Nuclear University (MEPhI) by sending and receiving students. Also, the Japan-Russia Joint Forum has been held yearly in Moscow and Tokyo by rotation for students participating in the exchange program, other students and faculty members of the host university to understand their research and exchange opinions.

In 2020, due to the effects of COVID-19, activities involving travel were not able to be conducted, but instead, the 4th, 5th and 6th Japan-Russia Joint Forum was held using the online system. In addition, special lectures by MSU faculty members and ongoing research guidance by faculty members to long-term students after returning to countries were conducted online.

Student-Mobility

Outbound

Planned sending students to MSU (8 Short-term, 2 Long-term) and MEPhI (4 Short-term, 1 Long-term) were replaced to participations in the joint forum. 14 students at MSU quota and 6 at MEPhI (all received credits or certificates) were in.

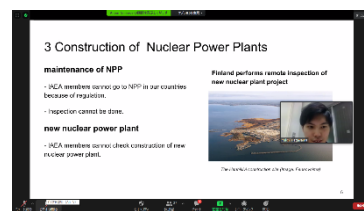
Inbound

Planned receiving students from MSU (8 Short-term, 2 Long term) and MEPhI (4 Short-term, 1 Long-term) were replaced to participations in the joint forum. 13 students at MSU quota and 6 at MEPhI (all received certificates) were in.

	2020	
	Plan	Results
Outbound	15	20
Inbound	15	19

Forming the University Network with Quality Assurance

In order to continue fruitful activities, among Tokyo Institute of Technology (Tokyo Tech) and MSU, and MEPhI, we have been agreed to do best on (1) implementation of online special lectures, (2) continuation of research guidance for past participating students, (3) promotion of joint research, and (4) collaboration in recruiting students for the Japanese Government (MEXT) Scholarship Program, "Graduate Program to Foster Global Ecosystem".



Presentation at 5th joint forum

Promotion of Student-Mobility Environment

The activities need to travel had to be cancelled this year, however, all procedures for the student who already decided to be accepted, as well as the daily communication with MSU and MEPhI have been carried out under the centralized management of the project office. It shows the environment for the activities are properly arranged.

In addition, the project office has played a role of the initial contact point for recruiting students for the Japanese Government (MEXT) Scholarship Program, "Graduate Program to Foster Global Ecosystem" which Tokyo Tech was adopted and 2 MSU students are coming in 2021.

Internationalization of the university, Information disclosure and Publication of outcome

The project's website (<http://www.iuep-russia.titech.ac.jp/>) provides information of our activities in Japanese, English and Russian. Also, the results of research guidance were presented at conferences and published in academic journals. For instance, at the "Nuclear Energy Advanced Human Resource Development Forum" held in December 2020 hosted by the Laboratory for Advanced Nuclear Energy of Tokyo Tech with the participation of the MIT, the U. of Wisconsin, etc., a student and alumnus who had been sent to MEPhI made presentations focusing on the exchange activities with Russian students through the project. It was a good opportunity to disseminate the activities and the project to the outside world.

Good Practices

Ongoing research guidance by the host faculty for long-term exchange students has been producing steady effects on research and education.

The paper by a MEPhI student co-authored with a Tokyo Tech student was published in two journals this year ("Nuclear Energy and Technology", Vol. 6, p. 155, 2020 and "Scientific Visualization", Vol. 12, p. 100, 2020). A Tokyo Tech student presented his research results at the 41st Annual Meeting of the Institute of Nuclear Materials Management (INMM) Japan Chapter in November 2020, co-authored with MEPhI, and indicated the contribution of this project in the acknowledgement.

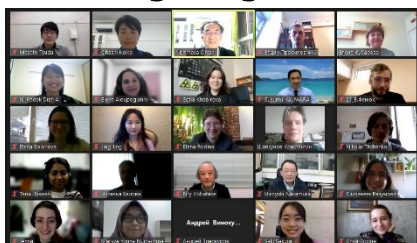
In addition, a joint paper that a Tokyo Tech student who went to MSU and the Institute of the Russian Academy of Sciences, and a Russian supervisor wrote was published in "Molecules" (Vol. 26, p. 1321, 2021), the peer-reviewed academic journal.

The continuous research and educational guidance to the students has produced excellent educational effects, and a framework for continuous and organic collaboration with the partner university laboratories has been formed. As so our activities have made a contribution to social dissemination by disclosing our outcomes.

5. FY2021 Progress

【Name of project】Nurturing leader scientists and engineers for healthcare, medical, nuclear power, and energy industries between Japan and Russia (Adopted year: FY2017, (Type A, Country Russia))

Exchange Programs



〈Participants of 7th Forum〉

In previous years, we have conducted student exchange programs with Moscow State University (MSU) and the National Research Nuclear University (MEPhI) by sending and receiving students. Also, the Japan-Russia Joint Forum has been held yearly in Moscow and Tokyo by rotation for students participating in the exchange program, other students and faculty members of the host university to understand their research and exchange opinions. Although the impact of COVID-19 limited activities involving travel, the 7th and 8th Japan-Russia Joint Forum were held using the online system. In addition, the special lectures by MSU faculty members and the ongoing research guidance by faculty members to long-term students after returning to home countries were conducted online.

Student-Mobility

Outbound

Planned to send students to MSU (8 Short-term, 2 Long-term) and MEPhI (4 Short-term, 1 Long-term) were replaced to participations in the joint forum and/or the special lectures by MSU faculty members. 16 students at MSU quota and 5 at MEPhI received credits or certificates.

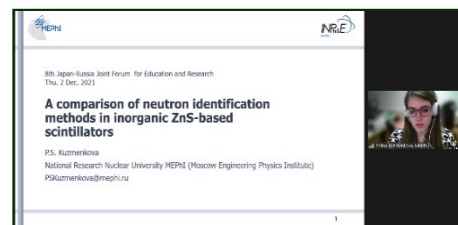
Inbound

Planned to accept twice as many students from MSU (16 short term, 4 long term) and MEPhI (8 short term, 2 long term) as we had planned a year. Started the acceptance procedure on campus, but the COVID-19 disaster did not subside and had to abandon it.

	2021	
	Plan	Results
Outbound	15	21
Inbound	15	17

Forming the University Network with Quality Assurance

In order to continue fruitful activities, among Tokyo Institute of Technology (Tokyo Tech) and MSU, and MEPhI, we have been agreed to do best on (1) continuation of research guidance for past participating students, (2) promotion of joint research, and (3) recruitment of MSU students for the Japanese Government Scholarship Program. In preparation for the double degree program, discussions were held among Tokyo Tech and MSU and MEPhI, respectively, on a future joint teaching program, Cotutelle program.



〈Presentation of 8th Forum〉

Promotion of Student-Mobility Environment

As the COVID-19 was not under control, all the students exchange activities involving actual travel were cancelled. However, the program office was ready to start the in-house application procedures, visas, and airline tickets for the Russian students, as well as the communication with faculty members of MSU and MEPhI. Tokyo Tech students participating in the dispatch program to Russia has been prepared as well.

Internationalization of the university, Information disclosure and Publication of outcome

The contents of the research and education results obtained by implementing this project are made public by presentations at academic conferences and dissertations, and efforts are being made to disseminate the results.

Good Practices

A long-term student from MSU in FY2018 was able to summarize his research and educational achievements through continuous guidance of Tokyo Tech faculty after returning to Russia, and submitted a paper co-authored by Tokyo Tech and MSU to a peer-reviewed academic journal "Antibiotics" (Volume 10, page 489, 2021, Impact Factor 4.6). Based on this project, Tokyo Tech and MEPhI jointly applied for and were selected for the "International Cooperative Decommissioning Research Program" by the Japanese and Russian governments in FY 2019, and successfully completed. The results were highly evaluated, and we were selected again for the program in FY2021, and continuing the joint research. In addition, we jointly applied for the same program with St. Petersburg University on a different theme, which was accepted, and started the research. Thus, Tokyo Tech has been deepened the inter-university cooperation based on this project, and promoting fruitful relationships with other top Russian universities.