

Course	Duration	Announcement	Deadline	Selection Result	Venue	Capacity
Instructor Training Course						
Reactor Engineering	5 Jul. - 8 Aug. 2023	Feb.	Apr.	May	Tokai	8
Nuclear/Radiological Emergency Preparedness	5 Jul. - 26 Jul. 2023	Feb.	Apr.	May	Tokai	5
Environmental Radioactivity Monitoring	5 Jul. - 26 Jul. 2023	Feb.	Apr.	May	Tokai	4
Advanced Instructor Training Course						
Reactor Engineering	14 Nov. - 24 Nov. 2023	Jun.	Jul.	Sep.	Tokai	8
Nuclear/Radiological Emergency Preparedness	14 Nov. - 24 Nov. 2023	Jun.	Jul.	Sep.	Tokai	4
Environmental Radioactivity Monitoring	14 Nov. - 24 Nov. 2023	Jun.	Jul.	Sep.	Tokai	5
Nuclear Technology Seminar						
Basic Radiation Knowledge for School Education	21 Sep. - 4 Oct. 2023	Apr.	Jun.	Jul.	Tokai	14

Nuclear Technology Seminar (Nuclear Plant Safety, Nuclear Energy Officials and Site Preparation and Public Relations): TBD
The duration may change in case of unavoidable circumstances

Message from Director of NuHRDeC



Director
Mr.KATO Hiroshi Nuclear Human Resource Development Center
Japan Atomic Energy Agency

In 2022, the battle against COVID-19 has not ended yet. On the other hand, the number of people traveling around the world is growing. The ITP was able to be held face-to-face for the first time in three years, as travel restrictions in Japan have been eased. We, the staffs at JAEA, look forward to welcoming all applicants who are interested to become a lecturer in the field of nuclear to join this program in Japan.

This year, we have done training course effectively and progressively such as conducting face-to face and utilizing the online method. We believe that continuing the ITP will promote the use of nuclear power and radiation utilization in Asia and contribute to the development of countries in the Asian region, and we are very honored to do so. We hope that we can continue to make further progress with your cooperation.

ITP Counterparts

Country	Organization	Abbreviation
Bangladesh	Bangladesh Atomic Energy Commission	(BAEC)
Indonesia	Indonesia National Research and Innovation Agency	(BRIN)
Kazakhstan	National Nuclear Centre of the Republic of Kazakhstan	(NNC RK)
	Institute of Nuclear Physics	(INP)
Malaysia	Malaysian Nuclear Agency	(Nuklear Malaysia)
Mongolia	Nuclear Energy Commission	(NEC)
Philippines	Philippine Nuclear Research Institute	(PNRI)
Saudi Arabia	King Abdullah City for Atomic and Renewable Energy	(KACARE)
Sri Lanka	Sri Lanka Atomic Energy Board	(SLAEB)
Thailand	Thailand Institute of Nuclear Technology	(TINT)
Turkey	Turkish Energy, Nuclear and Mineral Research Agency	(TENMAK)
Viet Nam	Viet Nam Atomic Energy Institute	(VINATOM)

An Impressive Memory



In this year, the ITP was held by inviting trainees to Japan in the situation of the COVID-19. Through infection control measures were taken to prevent infection, and we made sure to check the health status and measure the body temperature. This is the first time in the long history of the ITP that health checks have been carried out every morning. It was hard to check the health of the trainees before training course, but it was a pleasure to meet the cheerful trainees. The picture shows the body temperature check by thermometer.



Japan Atomic Energy Agency (JAEA)

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Instructor Training Program

NEWS LETTER

Vol.

9

March 2023



Exercise in ITC on Reactor Engineering



Exercise in Basic Radiation Knowledge for School Education

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Develop Instructors in Nuclear Field in Asia

Instructor Training Program (ITP)

ITP is conducted by Nuclear Human Resource Development Center (NuHRDeC), the Japan Atomic Energy Agency (JAEA) since 1996 under contract with the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT). The aims of ITP are to contribute to human resource development (HRD) in the field of nuclear technology in Asian countries and to make nuclear facility located areas in Japan become a hub for international activities. ITP initially started with two participating countries, and currently the number of the countries has increased up to eleven.

Training in Japan

Instructor Training Course (ITC)

ITC is designed to foster technical instructors concerning three areas: Reactor Engineering, Nuclear/Radiological Emergency Preparedness and Environmental Radioactivity Monitoring. During the three-to-five-week courses in Tokai-mura, Ibaraki Prefecture, Japan, participants from Asian countries aim to acquire necessary basic knowledge as instructors through joining lectures by experts, exercises using a variety of equipment, and visits to nuclear facilities.

Advanced Instructor Training Course (AITC)

AITC is designed for enhancing FTC instructors' quality in three areas: Reactor Engineering, Nuclear/Radiological Emergency Preparedness and Environmental Radioactivity Monitoring. Participants of this course stay in Tokai-mura, Ibaraki prefecture, Japan for about ten days. They are expected to acquire advanced technical knowledge and skills through the course. The lectures and exercises are organized to learn deeply about themes of each area.

Nuclear Technology Seminar (Seminar)

Seminar is designed to cultivate engineers and specialists in specific areas of nuclear technology. In Tsuruga city, Fukui prefecture, three seminars are held: Nuclear Plant Safety, Nuclear Energy Officials, and Site Preparation and Public Relations. Basic Radiation Knowledge for School Education is held in Tokai-mura, Ibaraki Prefecture. Participants of Seminar are invited to Japan for one to four weeks to improve their specialty through tours to nuclear facilities, discussion and interaction with people at nuclear facilities located areas, as well as lectures and exercises.

Training in Participating Countries

Follow-up Training Course (FTC)

FTC is held in each ITC participating country. The ITC participants give lectures in FTC by making the best use of knowledge and experience gained from ITC. They become excellent instructors by the accumulation of teaching experiences year by year through FTC. Two or three Japanese experts are dispatched to FTC to give lectures and technical advice for the establishment of the self-sustainable training courses.

Tsuruga City, Fukui Prefecture

The Wakasa Wan Energy Research Center
Fukui International Human Resources
Development Center for Atomic Energy

Tokai-mura, Naka-gun, Ibaraki prefecture

The Japan Atomic Energy Agency
Nuclear Human Resource
Development Center

ITC (3 weeks - 5 weeks)

AITC (1.5 weeks)

To Japan

From Japan

Dispatch Japanese Experts
(1 week - 2 weeks)

FTC (1 week - 2 weeks)

To Japan

Nuclear Technology Seminar
(1.5 weeks - 4 weeks)

ITC, AITC, Seminar, FTC

Seminar



Bangladesh



Malaysia



Thailand



Saudi Arabia



Indonesia



Mongolia



Turkey



Sri Lanka



Kazakhstan



Philippines



Viet Nam

The Accumulated Number of ITP Participants (JFY 1996~2022)

Instructor Training Course	704
Advanced Instructor Training Course	51
Follow-up Training Course	5711*
Nuclear Technology Seminar	605

*The number of participants is the expected number. (as of 1 February 2023)

Instructor Training Course (ITC)



Reactor Engineering

Duration: 14 November – 16 December 2022(5 weeks)
Venue: Tokai, Ibaraki Prefecture, Japan
Participants: 8

Course Outline Participants acquire a wide range of knowledge on nuclear engineering and the skills to disseminate the knowledge as a lecturer. The course is open to engineers, researchers and academic staff in the nuclear field. In JFY 2022, 20 lectures, 4 exercises 8 facility visits and 1 group work were conducted.



Activity content

Experience the operation of a nuclear reactor with the JRR-1 simulator

Exercise using the JRR-1 simulator at the Nuclear Science Research Institute in JAEA can be done with a sense of realism because the operation is performed using the control panel that was actually used. Participants spent a whole day to practice everything from starting up the reactor to responding to simple abnormal events. They had experienced the characteristics of a nuclear reactor directly, such as sounding an alarm when the control rod was moved too fast and checking for changes in control rod position as reactor temperature rises. Especially for participants who do not have a research reactor in their own country, it was a valuable opportunity to simulate the operation of a nuclear reactor.

Impressions

Mr. Zareen Khan Bin ABDUL JALIL KHAN
Malaysian Nuclear Agency, Malaysia



At JRR-1 Simulator, we are operating essentially in close to real time, and have a dynamic response with high fidelity to provide plant responses during normal operations and accident situations. It also has a user-friendly interface to allow a user's interactions with the simulator during the operation of the simulated plant. We also able to understand of nuclear reactor operation and plant process control behavior. JRR-1 simulator is developed as an interactive tool for education and training with the bases of the operation and reactor physics. JRR-1 simulator is developed to be a training platform in operations of start-up, power controlling, and shut down, teaching tool in reactivity control, reactor cooling, and reactor protection system and multi-functional interactive, configurable, and educative simulator. Highly hoped that this JRR-1 simulator will be considered favorably among local and international students.



Activity content

Integrated Drill to prepare emergency

The participants acquired knowledge and insight related to radiation and radiation protection through the three-week training, experienced and learned a wide variety of radiation emergency response techniques through practical training. Among them, the "Integrated Drill for Nuclear/Radiological Emergency Preparedness" is positioned as the summary of the three-week training and can be said the most important practical training. An accident scenario was created in which a car transporting radioactive materials caused a traffic accident, injuring the driver and contaminating the road due to the damage to the container for transporting radioactive materials. In accordance with the scenarios, they conducted not only accident response such as first aid for injured people, identification of contaminated areas, decontamination, but also the media training. Through this integrated drill, the participants were able to deepen their understanding of what they had learned through lectures.

Nuclear/Radiological Emergency Preparedness

Duration: 14 November – 2 December 2022(3 weeks)
Venue: Tokai, Ibaraki Prefecture, Japan
Participants: 5

Course Outline Participants acquire knowledge and skills on emergency response in case of a radiation accident inside and outside nuclear reactor or radiation handling facilities. The course is open to engineers, researchers and academic staff in the nuclear field. In JFY 2022, 14 lectures, 8 exercises and 3 facility visits were conducted. Some parts of the curriculum were joint classes with ITC on Environmental Radioactivity Monitoring.

Impressions

Ms. Kuralay MUSTAFINA
National Nuclear Centre
of the Republic of Kazakhstan, Kazakhstan



Thank you very much for organizing the Nuclear Radiation Accident Preparedness Course at the Nuclear Human Resources Development Centre. The knowledge and skills received during the course are very useful and important for me, for my work. Besides, I also would like also to thank you for arranging technical tours to Fukushima Daiichi NPP under the curriculum, this was a new and interesting experience for me. And in conclusion, I would like to express my sincere gratitude to the entire staff of the NuHRDeC for the warm welcoming of course participants and for providing a great volume of valuable and significant information and education materials.

Environmental Radioactivity Monitoring

Duration: 14 November – 2 December 2022(3 weeks)
Venue: Tokai, Ibaraki Prefecture, Japan
Participants: 5

Course Outline Participants acquire knowledge and skills on environmental radioactivity monitoring. The course is open to engineers, researchers and academic staff in the nuclear field. In JFY 2022, 12 lectures, 10 exercises and 6 facility visits were conducted. Some parts of the curriculum were joint classes with ITC on Nuclear/Radiological Emergency Preparedness.

Activity content

Radioactive materials in the soil

Many things around us contain substances that emit radiation. In particular, a variety of radioactive materials can be detected in the soil that is familiar to us, including natural radionuclides from ancient times and anthropogenic radionuclides released from past nuclear weapons testing and the unclear accident such as the Fukushima Daiichi Nuclear Power Station. The soil is important investigation samples to monitor the effects of nuclear facilities on residents in the surrounding areas.

In this course, soil samples were collected using three different methods for different investigation objectives, and gamma-ray emitting nuclides in soil samples were measured using a germanium semiconductor detector. The participants were able to experience and deepen their understanding of a series of procedure: to collect soil sample, to pretreat for measurement, to measure by the germanium semiconductor detector and to evaluate of radioactivity concentration.



Impressions

Mr. Nopparit CHANGKIT
Thailand Institute
of Nuclear Technology, Thailand



The training gave me a better understanding of various subjects such as measurement of environmental samples by Ge detector, uncertainty, etc. because of the knowledge gained from the knowledgeable instructors. This training gave me new ideas that I can apply to my career as well as practicing the creation of suitable teaching materials for academic dissemination to meet the objectives in order to prepare for the next lecturer. In addition, the training allowed me to meet new friends and exchange experiences with each other.

Advanced Instructor Training Course (AITC)



Facility Visit: JAEA Fukushima

Reactor Engineering

Duration: 20 September – 30 September 2022 (1.5 weeks)
Venue: Tokai, Ibaraki Prefecture, JAPAN
Participants: 6

Course Outline Participant acquire advanced and specialized knowledge and skills on neutronics and nuclear fuel cycle. In JFY 2022, 8 lectures, 3 exercises and 3 facility visits were conducted.

Activity content

The course was designed to acquire knowledge on neutronics and nuclear fuel cycle. Through this program, state-of-art nuclear data, the neutronics Monte Carlo code on neutronics PHITS, and also the nuclear-fuel-cycle simulation code NMB were lectured together with practical exercises. Advanced techniques on neutron activation analysis were also provided. Technical tours were included to the JAEA' s facilities such as JRR-3, J-PARC and RFEF (The Reactor Fuel Examination Facility).



Facility Visit: JRR-3 in JAEA

Impressions

Ms. Munkhsaikhan JARGALSAIKHAN
National University of Mongolia, Mongolia



I am highly satisfied with the course contents of AITC. I focused on the PHITS simulation. It is very useful for my work. We learned applications of nuclear data, neutron activation analysis and some subjects related to simulation not only PHITS but also nuclear fuel cycle simulator NMB. We simulated based on our own country's cases and presented the results. Other participants were very kind and excellent at working together.



Facility Visit: JAEA Fukushima

Nuclear/Radiological Emergency Preparedness

Duration: 20 September – 30 September 2022 (1.5 weeks)
Venue: Tokai, Ibaraki Prefecture, JAPAN
Participants: 4

Course Outline The aim of this course is to develop human resources who can develop emergency response plans using assessment technology for contamination and distribution. In JFY 2022, 6 lectures, 6 exercises and 2 facility visits were conducted. Some parts of the curriculum were joint classes with AITC on Environmental Radioactivity Monitoring.

Activity content

When radioactive materials are released into the atmosphere, it can be useful information for emergency response action plans and evacuation if we can predict their migration in the environment and evaluate their distribution.

In this course, lectures on technology for three-dimensional visualization of contamination by radioactive materials and technology for measuring radiation dose using unmanned aerial vehicles such as drones were provided. Lectures and practical training on simulation technology for the migration of released radioactive materials in the atmosphere, land, and rivers were also conducted. A group discussion on how to utilize the advanced technology in the emergency response action plan was held among the participants as well. Through learning the latest technology, actively asking questions about how to use it and group discussions, the participants from each country have deepened their friendship.

Impressions

Ms. Sibel ÜNLÜ
Turkish Energy Nuclear and Mineral Research Agency, Turkey



Since Türkiye is a newcomer to nuclear, learning from such an experienced country as Japan in the field of emergency response is an invaluable experience. The opportunity of using codes like WSPEEDI-II and OSCARR by hands on experience was very useful. Also, facility visits allowed us to see how far Japan is in emergency response infrastructure. AITC helped me refresh my knowledge and learn the latest developments in the nuclear emergency field. Preparing and making presentations contributed to the development of my ability to convey what I know to large groups. At the next FTC that we will conduct in Türkiye, I will transfer my new knowledge to the trainees.

Environmental Radioactivity Monitoring

Duration: 20 September – 30 September 2022 (1.5 weeks)
Venue: Tokai, Ibaraki Prefecture, JAPAN
Participants: 5

Course Outline The aim of this course is to acquire how to use the simulation model for atmospheric dispersion of radioactive materials. In JFY 2022, 6 lectures, 6 exercises and 2 facility visits were conducted. Some parts of the curriculum were joint classes with AITC on Nuclear/Radiological Emergency Preparedness.

Activity content

In the AITC on Environmental Radioactivity Monitoring, participants learned how to utilize diffusion simulation models of radioactive materials in the atmosphere.

In order to implement environmental radioactivity monitoring efficiently and effectively, it is effective to formulate a monitoring plan by accurately utilizing a diffusion model of radioactive materials in the atmosphere. Then, using the second version of Worldwide Version of System for Prediction of Environmental Emergency Dose Information (WSPEEDI-II), the participants analyzed several scenarios by themselves and observed how the dispersion of radioactive materials in the atmosphere diffused and how the dose distribution differed depending on the scenario. They also analyzed the effects of protective measures on the public during a nuclear emergency using the Off-Site Consequence Analysis code for Atmospheric Release in Reactor Accident (OSCAAR) to deepen their understanding of these measures.

Many of the participants expressed their desire to learn more about WSPEEDI-II and other tools so that they can use them in their own countries.



Exercise: Computer Calculation

Impressions

Mr. Norfaizal Bin MOHAMED
Malaysian Nuclear Agency, Malaysia



AITC on ERM has exposed me to new knowledge on atmospheric dispersion modeling. The two computer simulation codes presented, namely, WSPEEDI and OSCARR are interesting and useful in my future work. In addition, the technical visit to the JAEA facility in Fukushima introduced us to the latest technology and was very beneficial to my country. I also would like to thank the organizer for their excellent arrangement throughout the course. I am excited to share this new knowledge with my colleagues.

Follow-up Training Course (FTC)



Radiological Emergency Drill in Nuclear/Radiological Emergency Preparedness, Thailand



Reactor Engineering



Viet Nam

Implementing simulation exercise – Viet Nam

FTC on Reactor Engineering in Viet Nam was held at the Institute of Nuclear Science and Technology (INST) in Hanoi City. It was worked skillfully in the cooperation with the coordinator and past ITC participants. About half of the 15 participants were from nuclear-related companies such as electric power companies and construction companies. Currently, the government of Viet Nam has withdrawn construction for nuclear power plants, but due to the countermeasures for global warming and the recent surge in crude oil and natural gas prices, nuclear power generation has been interested.

In a simulator exercise for the light water reactor VVER1200, the participants checked the plant behavior, enthusiastically. Practical exercise on bubble flow measurement using ultrasonic velocity distribution measurement method and simulation exercise on a research reactor in Viet Nam (DNRR), were also conducted. It was clear that they were putting a lot of effort into the exercise. There was also a great deal of interest in the small modular reactor (SMR), which has been drawing attention recently, and discussion was really active during the lecture on SMR.

INST requested to increase the number of lectures by Japanese experts and to get a lot of knowledge from Japan.



Exercise: Simulation



Nuclear/Radiological Emergency Preparedness



Thailand

Resuming emergency preparedness course - Thailand

Thailand Institute of Nuclear Technology (TINT) operates nuclear facilities such as research reactor, irradiation facilities by electron beam and gamma ray. TINT is also a responsible organization for emergency response at the accident site in the event of a nuclear and radiological emergency in Thailand.

In Thailand, the FTC on Nuclear/Radiological Emergency Preparedness (NREP) was held until 2009. Due to a shortage of instructors who can teach emergency response, the FTC on NREP was resumed this year to cultivate instructors who can provide guidance on how to respond to emergencies.

In the FTC on NREP, past ITC on Reactor Engineering and Environmental Radioactivity Monitoring participants cooperated as instructors, and 43 participants who are expected to play the role of emergency responders attended.

The participants recognized the need for emergency response by learning about accidents that have occurred in Japan and overseas, and also conducted radiological emergency drill over two days in the field. The drill on the

assumption that a neutron-irradiated sample by a research reactor would be damaged, causing a contamination accident and injuring the personnel responding to the accident was carried out.

TINT would like to continue holding FTC on NREP in the future in order to develop human resources who can respond to nuclear and radiological emergencies.



Closing Ceremony



Environmental Radioactivity Monitoring



Mongolia

Conducting exercise with ingenuities - Mongolia

The FTC on Environmental Radioactivity Monitoring in Mongolia was held at the Nuclear Energy Commission (NEC) in Ulaanbaatar. Although there is no nuclear power plant in Mongolia, the country relies on coal-fired power generation for more than 70% of its electricity generation (in FY 2018), which raises concerns about adverse health effects due to air pollution and other factors. Therefore, environmental radioactivity monitoring is becoming increasingly important in light of the future use of nuclear power. Mongolia is also concerned about the influences from nuclear facilities in the neighboring countries, and the establishment of an online monitoring system to monitor these influences has become an important issue.

In the FTC, ITC and AITC participants affiliated with NEC and Metropolitan Specialized Inspection Agency served as instructors, and the FTC is given an opportunity to develop experts for environmental radiation monitoring throughout Mongolia. The FTC included exercises of environmental sampling and other activities that simulate accidents at nuclear facilities in the neighboring countries in this year. Since the FTC

was held during the extremely cold winter season, various efforts and ingenuities had been made for successful exercises.

Taking into account the current situation and issues in Mongolia, JAEA provides some lectures introducing online monitoring system in Japan etc. Through the ITC and FTC, NEC and JAEA are working together to steadily develop human resources for environmental radiation monitoring in Mongolia.



Exercise: Environmental Sampling

Nuclear Technology Seminar

Site Preparation and Public Relations

Duration : 19 September – 28 September 2022 (1.5 weeks)

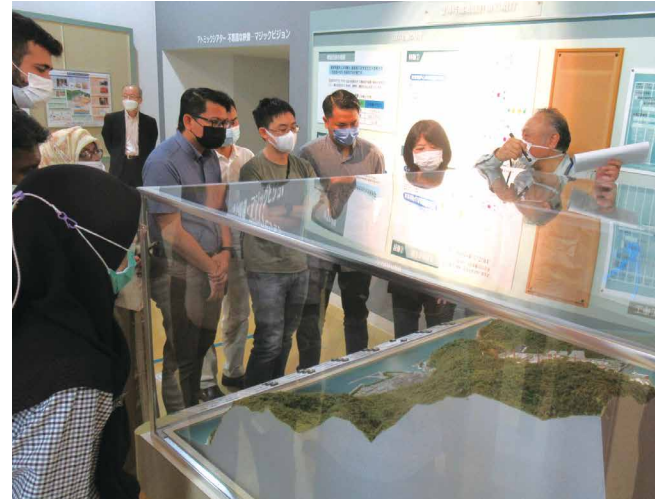
Venue : Tsuruga, Fukui Prefecture, Japan

Participants : 8

Outline

We give lectures to government officials in charge of nuclear power administration in Asian countries, specializing in site preparation and regulations to nuclear facilities, etc., as well as tours to related facilities.

In FY2022, lectures were given on topics such as Japanese policies related to nuclear site preparation, the history of securing nuclear site, building social consensus on nuclear power generation, and risk communication. Based on these lectures, they also visited a construction site for Tsuruga nuclear power plants (Units 3 and 4) of the Japan Atomic Power Company in Tsuruga City, Fukui Prefecture.



Visiting to a construction site for Tsuruga nuclear power plants (Units 3 and 4) of the Japan Atomic Power Company (briefing)

Basic Radiation Knowledge for School Education

Duration : 17 October – 28 October 2022 (2 weeks)

Venue : Tokai, Ibaraki Prefecture, Japan

Participants : 14

Outline

The course objective is to foster human resources who will disseminate correct knowledge of nuclear energy and radiation to the public and students in Asian countries. The course is open to persons in charge of public relations in nuclear research institutes, officials in educational administration of governmental agencies, and to school teachers. The course covers basic topics such as an introduction to nuclear energy and radiation, radiation effects on human body, radiation education in Japan, and public information. The course also offers exercises to learn effective methods for teaching radiation knowledge for the public and students.

In FY 2022, seminar participants made a "Cloud Chamber" by themselves, and observed the track of radiation which was illuminated in LED light. By feeling radiation visually, the participants were able to feel the presence of radiation close to them.



Exercise on cloud chamber

Nuclear Plant Safety

Duration : 24 October – 18 November 2022 (4 weeks)

Venue : Tsuruga, Fukui Prefecture, Japan

Participants : 8

Outline

We give lectures and practical trainings to engineers and researchers in charge of R&D of radiation utilization technology, basic nuclear technology, and operation of nuclear power reactors and research reactors in Asian countries, in order to develop human resources related to the safety of nuclear facilities.

In FY2022, using a nuclear power generation education simulator, the trainees experienced a start-up operation of a commercial nuclear reactor, changing of reactor power, and emergency shutdown in the event of an abnormality.



Training with a nuclear power generation education simulator

Nuclear Energy Officials

Duration : 28 November – 16 December 2022 (3 weeks)

Venue : Tsuruga, Fukui Prefecture, Japan

Participants : 8

Outline

We give lectures to government officials in charge of nuclear power administration in Asian countries. The lectures will be given on a wide range of content necessary for administrative management and operation related to radiation utilization technology and basic nuclear power technology. In addition, we carry out tours to related facilities.

In FY2022, the trainees learned about nuclear power policy, nuclear safety administration, nuclear safety culture, safety measures and safety management of nuclear facilities, human resource development, and the use and application of radiation. In addition, they visited a nuclear power plant and a center for nuclear disaster prevention.



Visiting to a center for nuclear disaster prevention.

What is a Guest Lectures

Past ITC participants who showed excellent performance in ITC and actively contribute to FTC in their own countries are invited as guest lecturers to ITC. This system has started in 2010 and 36 guest lecturers have been invited from each country so far. In 2022, 3 past ITC participants were selected as the guest lecturers.

Philippine Nuclear Research Institute, Philippine
Completed ITC 2012 on Reactor Engineering

Dr. ASUNCION-ASTRONOMO Alvie Jadia



Philippine



My experience and impression of ITC

My technical background is in physics and the first formal training I had in Reactor Engineering (RE) was through my participation in the ITC on RE. The ITC was very helpful as I was starting my career in the nuclear field. In particular, the ITC on RE equipped me with knowledge and skills that I find useful as I lead the project to establish the PRR-1 Subcritical Assembly. I was also able to share the knowledge I gained by helping build the competence of the PNRI reactor group. Prior to our involvement in ITC, there were no Philippine University that offers nuclear education courses. The ITC enabled me to develop syllabi on nuclear topics that are now being offered in two Philippine Universities. Through these, I am able to continuously utilize and share the knowledge I gained through the ITC.

My experience and impression as a lecturer

I have been one of the lecturers and served as coordinator in the FTC on RE. Recently, I mostly focus on nuclear education initiatives of PNRI in collaboration with Philippine Universities. I usually deliver topics on reactor physics, kinetics, and nuclear reactor calculations. My recent invitation as guest lecturer is also a good opportunity to share about application of reactor engineering concept through the iPWR simulator. It also gave me an opportunity to interact with participants from other countries, which reminded me of the great contribution of ITC not only in the Philippines but also in several Asian countries. I am grateful for the continued support of JAEA to the Philippines through the ITC-FTC.

Bangladesh Atomic Energy Commission, Bangladesh
Completed ITC 2010 on Nuclear/Radiological Emergency Preparedness

Ms. PAUL Shampa



Bangladesh

My experience of FTC

Since 2012, the first year of FTC, I have acted as a resource person in almost all the FTCs on Nuclear/Radiological Emergency Preparedness (NREP). Working on FTC with diversified people from different fields and organizations as well as JAEA experts, is a great experience. Providing lectures in FTC gave me the opportunity to share the acquired knowledge with our national and local emergency responders. I became course coordinator in 2019 and was able to introduce the integrated emergency drill for the first time. I have made the table top exercise more interactive. Everybody gave a speech and described their role with enjoyment. With good teamwork of all

participants and instructors, we overcame all the difficulties to running a course.

My experience and impression as a lecturer

I have given lecture on topic of "Nuclear and Radiological Emergency Preparedness in Bangladesh" as a guest lecturer. I am feeling privileged to give lecture as guest lecturer and come to Japan for ITC after one era. It was really great experience for me to interact with participants from different countries and spend some great time with them. I also feel honoured to have the great hospitality from JAEA people. It will be a lifelong experience for me.



Viet Nam Atomic Energy Institute, Viet Nam
Completed ITC 2010 on Environmental Radioactivity Monitoring and the other one course

Ms. NGUYEN Thi Thu Ha



Viet Nam



My experience and impression of ITC

I work at the Institute of Nuclear Science and Technology (INST), Viet Nam Atomic Energy Institute (VINATOM). The ITC Environmental Radioactivity Monitoring (ERM) has improved my knowledge and skills regarding collecting environmental samples, pretreatment of the samples, and measurement of radioactivity in the samples. The knowledge and skills I gained from the ITC also helped me to improve my environmental radioactivity monitoring procedures.

My experience and impression as a lecturer

The INST, VINATOM has been conducting the FTC on ERM since 2010. The aim of the FTC is to provide participants with the most basic and

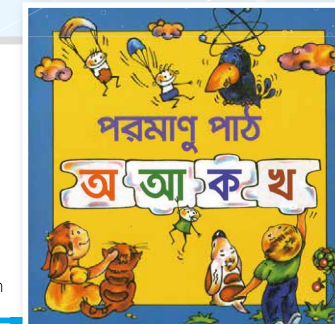
necessary knowledge (both theoretical and practical) about environmental radioactivity monitoring techniques. The topics of my lectures include collection, pretreatment and radioactivity measurement of environmental sample. This year, I was invited to take part as a guest lecturer for ITC on ERM to share information regarding environmental radioactivity monitoring and FTC in Viet Nam. Providing lectures in FTC gave me the opportunity to share my knowledge and skills for participants of the ITC who work for environment monitoring related organizations and academic institutions, and are willing to contribute to human resource development in the field of environmental radiation and radioactivity monitoring. I would be grateful to contribute to the continued success of FTC and ITC.



Bangladesh

Mr. Ragib Absar RAMON

Bangladesh Atomic Energy Commission (BAEC)
Completed Seminar 2021 on Basic Radiation Knowledge for School Education



Radiation education activity in Bangladesh

In the Bangladeshi education system, radiation education starts at the high school level. Then more details of radiation education are given at college and university levels. In Higher Secondary Education textbooks provided by National Curriculum and Textbook Board (NCTB) gives students proper knowledge about what is radiation and its pros and cons.

In University levels Nuclear Physics and Nuclear Engineering, Medical Physics, Radiological Physics, Nuclear, and Radiochemistry are being taught to the students. These subjects cover a vast area like basic properties of nuclei, radioactivity, the interaction of radiation with matter, nuclear reactors, nuclear fissions, nuclear fusions, accelerators biological effects of ionizing radiations, external and internal effects, low-level radiation effects, radiation protection guide and shielding, radiation detection, Imaging technique - gamma camera, radio-pharmaceuticals radiotherapy, radiation protection, radiation dosimetry.

B.Sc., M.Sc., M. Phil, Ph.D. students from Different universities

Books and leaflets in Bangladesh

complete their thesis work from different institutions and research facilities of the Bangladesh Atomic Energy Commission (BAEC). BAEC has its own Training Institute which performs various training programs with and without the collaboration of the Japan Atomic Energy Agency (JAEA)

Bangladesh is expecting to start the nuclear power journey very soon. Public awareness programs are organized by Rooppur Nuclear Power Plant (RNPP) Project to reduce the fear of radiation. Usually, their target audience is School or College going students. They provide school-going students with various cards, books, and leaflets that contain basic knowledge about radiation and they are written at an easy level and depicted in an interesting way so that students feel attracted to read them. The Main concern of them is to spread knowledge of radiation to root-level people and make them aware of the safety features of RNPP so that they can get rid of superstitions and wrong concepts about radiation.



Philippine

Ms. Miriam Fabrigas REJAS

Philippine Nuclear Research Institute
Completed Seminar 2019 on Basic Radiation Knowledge for School Education

Radiation education activity in Philippine

The Philippine Nuclear Research Institute (PNRI) under the Department of Science and Technology has been conducting various education programs, radiation information, and communication activities, to bring awareness and educate the young generation in the country.

Through the Institute's Nuclear Training Center, Seminar on Nuclear Science for High School Science Teachers and Course on Nuclear Technology for University/College Faculty is being offered annually. This is a four-to-five-week training course that aims to familiarize the participants with the basics of nuclear and radiation science and its applications and be eventually able to integrate these concepts in classroom discussions on science subjects and courses, increasing the youth's knowledge and awareness in nuclear science and technology.

On-the-Job Training (OJT)/Student Internship Program, designed for secondary and tertiary students seeking an internship with PNRI is regularly offered. The purpose of the program is to provide an opportunity for students to work alongside with scientists, researchers to gain valuable experience in the technical and administrative aspects of nuclear science and technology services, research and education.

The Nuclear Science and Technology Education Program (nSTeP+) for K-12 Teachers and Students aims to support, strengthen, and sustain nuclear science and technology education in the Philippines by providing opportunities to promote the peaceful uses

and applications of nuclear science and technology and enrich teachers and students' knowledge, skills and experiences in science. It is envisioned that through this program, more students will be enthused to take a career in STEM if not in nuclear science/engineering and public understanding of nuclear science and technology will be increased.

Likewise, the Philippines has successfully implemented the IAEA outreach program for secondary school students in cooperation with the Department of Education. The project aims to increase the youth's interest in nuclear science and technology and inspire them to consider a future career related to Science, Technology, Engineering and Mathematics (STEM) courses.

Future plan of the radiation education for children

With PNRI as the sole agency in the country on nuclear it envisions to educate various sectors as it continuously formulates and implements teaching programs and strategies applicable to the young generation. The Institute plans and aims to improve the accessibility and quality education using Information Technology and other innovative education technologies such as social media, among others.



Educational activity on radiation in Philippines

Current Initiatives in NPP Sited Areas

TOPIC

Through the lecturer training project, we are disseminating the efforts in regions where nuclear facilities are located to overseas!

Mihama Town, Mikata District, Fukui Prefecture

Mihama Town Energy Environmental Education Experience Center "Kiipasu"

Zipcode : 919-1201,
Address : 62-1 Nyu Mihama Town Fukui Prefecture, Japan
<https://www.town.fukui-mihama.lg.jp/site/kiipasu/>
TEL:0770-39-1116



Mihama Town,
Mikata District,
Fukui Prefecture

"Kiipasu", the only school in Japan specialized in energy and environmental education

We interviewed Mr. Takashi HASHIBA, Director of Kiipasu, an energy and environmental education experience center in Mihama Town, Fukui Prefecture.



Mr. Takashi HASHIBA

JAEA What is the purpose of Kiipasu?

Mr. Hashiba Kiipasu is a facility that cultivates the ability to understand the features of energy through various experiences specialized in energy and environmental education and consider about our daily lives and the global environment. It opened in April 2017 and celebrated its 6th year this year. It plays a role of the "experience" part of the energy and environmental education that Mihama Town conducts in elementary and junior high schools. It is also used as a place for field trips and excursions by neighboring municipalities.

JAEA What kind of learning are you doing specifically?

Mr. Hashiba Kiipasu has 40 programs in line with Mihama Town's energy and environmental education curriculum, all of which are explained by professional instructors. One of the programs for elementary school students is "Experience of using cooking stove", on which they cook rice with firewood and learn the concept of carbon neutrality. The content is designed so that the students can realize the invisible energy with their experience while having fun. The program for junior and senior high school students is built on what the students learn at school and focusing on themes such as global warming and smart use of energy. It allows students to learn more quantitatively and scientifically, and to think about energy and the global environment objectively.

In addition, two years ago, we introduced a storage battery linked to Kiipasu's solar power generation (output of about 10kw) and a power storage facility (V2H) using an electric vehicle. At the same time, we have installed monitors that display in real time the state of electricity generated by solar power, electricity used in Kiipasu, charging and discharging of storage batteries and electric vehicles, etc., and we are working to enhance the exhibition materials related to carbon neutrality. In response to the ever-changing global energy situation, we always provide learning programs that pursue the most advanced content on energy.

JAEA Please tell us about your future plans.

Mr. Hashiba With the goal of achieving carbon neutrality by 2050, we are reviewing our program for junior high

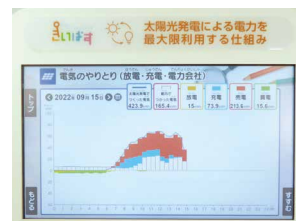
school students. This summer, we invited teachers from all over Japan to participate and held a hands-on meeting to evaluate and consider the revised plan. We are currently considering how to reflect the opinions from the participants of the hands-on meeting. I would be very happy if children not only in Mihama Town but all over Japan could experience Kiipasu programs.

JAEA Lastly, please give a message to children.

Mr. Hashiba It is very important to think about how Japan will secure energy, including electricity, toward a carbon-neutral society. For example, when discussing the shortage of electricity, it is important to properly grasp the essence of the problem, such as whether the power generated is at a certain point in the day or whether it is insufficient throughout the day. I hope that the children will think and discuss future energy security and the global environment as issues that they are required to take immediate action.



"Touchable globe" allows you to see near-real-time weather information and various movements on the earth such as oil tankers



An easy-to-understand graph showing the exchange of electricity inside Kiipasu



Kiipasu offers a bus fare copayment system for groups that come from far away for school events. For details, please contact Kiipasu.



President

Prof. Dr. Abdulkadir Balıkcı

Turkish Energy, Nuclear and Mineral Research Agency

Professional Background

Prof. Balıkcı graduated from Gazi University in 1992. He received his master's degree in 1996 and his doctorate in 2003 from New York University Tandon School of Engineering (New York Polytechnic University) Electrical and Computer Engineering. He started working as a lecturer in the Department of Electronics Engineering at Gebze Technical University (Gebze Institute of Technology) in 2004 and still continues his academic activities at the same university. He was appointed as the Founding President of Turkish Energy, Nuclear and Mineral Research Agency in August 2020, and as the President of the Agency and Chairman of the Executive Board in January 2021.

Prof. Balıkcı's academic work topics are Lithium-Based Battery Management Systems, Energy Storage Technologies, Electric Vehicle Technologies, Electric Power Systems, Electric Machines, Power Electronics, Electromagnetic Launch Systems and Renewable Energy Systems.

Question

What kinds of actions have you taken towards the establishment of a sustainable education system in Türkiye?

Answer

As TENMAK, we are providing various trainings in the nuclear field. Beginning of each year we announce national course programme list regarding radiation protection in different fields and radiation measurement. Also we provide internships to university students at our research institutes.

Question

How do you evaluate our ITP, and how all training courses (ITC, FTC and Seminar) have contributed to HRD in your country?

Answer

The support of such an experienced institution in the nuclear field like JAEA is very valuable to us. With the trainings and expertise JAEA provided we find the opportunity to strengthen our personnel competency. We also appreciate the support provided by the trainers from JAEA that contribute during the FTCs conducted in our country. Since we have a nuclear power plant project ongoing and we apply nuclear technologies in various fields in our country these training courses and their continuity are very important to us.

Question

What do you hope for Japan?

Answer

We hope that Japan will overcome the effects of the unfortunate accident happened in Fukushima Daiichi Nuclear Power Plant as soon as possible and continue its nuclear program in the most effective way and our cooperation will continue.

Interview



Turkey

Question

What was the reason that led you to take responsibility for human resource development (HRD) in your country?

Answer

In order to support R&D activities to benefit our nation and humanity in the fields of energy, mining, ionizing radiation, particle accelerators, and nuclear technology, TENMAK was founded. Its goals are to increase Turkey's competitiveness, sustain it, respond to the demands of innovation, and meet these needs. Among other duties, our agency acts as a kind of technical school with the trainings it provides through its experienced personnel and advanced infrastructure.

Question

What is your HRD policy?

Answer

Our HRD policy focus on providing an ecosystem that can foster a healthy work environment for gaining the required knowledge and experience which result in confidence that staff is qualified to perform the essential functions for energy solutions, improving nuclear energy capabilities and enhancing the transformation of minerals into technological products. Our priorities are respect, appreciation and working as one united team, learning new skills and by closely monitoring the developments in the world, playing a leading role for our country.