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Pursuing Excellence

Tokyo Institute of Technology –TOKYO TECH– develops distinctive students with outstanding qualities of creativity and leadership. TOKYO TECH is making significant contributions to science and technology in many fields of expertise, creating new and powerful synergies. TOKYO TECH, being a research-based university, is dedicated to education and research, and to exploring knowledge in science and technology. Pursuing excellence, TOKYO TECH serves society and the world.

Ministry of Education, Culture, Sports, Science and Technology
Program for Leading Graduate Schools

# Academy for Global Nuclear Safety and Security Agent

## *- DOJO for Global Nuclear Safety and Security -*


**Graduate Major in Nuclear Engineering**
**School of Engineering / School of Materials and Chemical Technology / School of Environment and Society**
**Tokyo Institute of Technology, Japan**

# Message from the Program Coordinator

With the global prospects of energy supply security and environmental issues in the long term, the securing of stable energy source is an urgent task for every country including developing countries. This fact drives many countries to be working to develop nuclear power and renewable energy sources. Japan has a history of commitment to promote nuclear energy development under the long-term R&D and utilization project.

Under such circumstances, following important incidents occurred in recent years.

• Nuclear power plants were possible targets by the terrorism when a large-scale international terrorism occurred in the United States on September 11, 2001.

• In the G8 Hokkaido Toyako Summit held in Japan in July 2008, the importance of 3S (Safety, Security and Safeguards/Nuclear non-proliferation) concerning the atomic energy was discussed and Japan declared to take initiatives of the 3S.

• At the nuclear security summit held in Washington in April 2010, Japan expressed its intention to set up a support center for enhancing global nuclear security.

• A severe accident occurred in the Fukushima Daiichi Nuclear Power Plant due to the Great East Japan Earthquake, which occurred on March 11, 2011.

Even under such circumstances, it is globally thought that an appropriate scale of atomic power is essential to support sustainable development. Moreover, Japan's missions are to curb the nuclear power accident in Fukushima as soon as possible and to contribute to safe operation of nuclear power plants in the world by learning a lesson from the accident. However, human resources who take such missions have not been developed sufficiently. Therefore it is our important task to develop human resources who can work as international leaders in the fields of industry, government and academia related to nuclear energy both domestically and internationally.

For this purpose, we have set "Proliferation of nuclear power which may threaten the foundations of human survival, nuclear terrorism and a global danger in atomic energy including large-scale atomic energy-related disasters and emergency exposure" (Nuclear Safety and Security fields). We believe that solving these problems should greatly contribute to the construction of our human society where safe and secure lives are guaranteed. Here, we have named a person "Global Nuclear Safety and Security Agent" who acts as an international leader in domestic and overseas industries, governments and academia related to atomic energy with high negotiation ability.

Those who are selected for this program will join residential "Global Nuclear Safety and Security Agent DOJO" to live together among other students so that they can learn from each other. DOJO students will also live with their instructors as their mentors at DOJO. We are expecting the instructors to enhance the students' awareness as global leaders through discussion in DOJO.

Summary of the program is as follows:

1) Freshmen Course Room System and Rotational Laboratory Visits:

The system has already been implemented from October 2008, for those who are in the Master's degree program. The freshmen shall not join any laboratory for the first six months at the Master's program and shall stay in the "Freshmen Course Room" instead so that they can take basic coursework classes and visit three laboratories to learn a wealth of world's most advanced studies.

2) Entrance into the "Global Nuclear Safety and Security DOJO" :

After Three months from their enrollment in the Master's degree program, only selected students shall be allowed to enter the DOJO program. We are expecting the students to live and learn together through their daily lives.

3) A two-staged Selection Test Process:

The selected students shall join the "Global Nuclear Safety and Security DOJO". Completing the Master's program, the next phase in the selection for the Doctor course is carried out to choose several students who should be of the highest level of intellectual achievements.

Since its establishment in 1957, the Department of Nuclear Engineering has consistently provided nuclear education for more than a half century. We have the world's top level institute regarding "nuclear education resources". Fostering international leaders as "Global Nuclear Safety and Security Agents", the instructors of the Department take charge of this program and have a united effort to develop human resources who will work in domestic and overseas industries, governments and academia fields related to atomic energy with high negotiation ability.

Masaki Saito
Program Coordinator

# Background of Program

**1) Terrorist attack in the U.S. on Sept. 11, 2001**

- A nuclear power plant was a suspected target

**2) G8 Hokkaido Toyako Summit held in July 2008**

- Recognized the importance of 3S [Safety, Security and Safeguards (Non-proliferation)
  ⇒ Japan declared to take initiatives of the 3S.

**3) Nuclear Security Summit in Washington in April 2010**

- Japan expressed its intention to set up a support center for enhancing global nuclear security.

**4) Great East Japan Earthquake on March 11, 2011 and the subsequent nuclear accident at Fukushima Daiichi Nuclear Power Plant**

Fukushima Daiichi Nuclear Power Plant Hydrogen Explosion Pictures provided : TEPCO

# Our Mission and program

**Mission**
**To make the world safe and secure places to live in**

**Our program is intended to develop nuclear human recourses in the field of Safety, Security and Safeguards who have :**

- **Competence in nuclear technologies**
- **Willingness to tackle global issues**
- **Mindfulness of societal issues**
- **Leadership in the international community**

## "Global Nuclear Safety and Security Agent"

### Challenge

**Safety**

- Fostering human resources for protection from large-scale nuclear disasters
- Measures against large-scale nuclear accidents
- Measures against emergency exposures
- Risk communications
- Emergency responses

etc.

**Security**

- Fostering human resources for prevention of nuclear terrorism
- Protection of radioactive materials and nuclear facilities
- Protection of radioactive materials at the time of transportation
- Enhancement in the practices at facilities for simulation

etc.

**Non-Proliferation**

- Fostering Japanese human resources for nuclear non-proliferation
- Fostering human resources from developing countries of Asia for nuclear non-proliferation
- Fostering future IAEA inspectors

etc.

# Career Path

1) **Senior specialists in nuclear safety, disaster control, counterterrorism and nuclear non-proliferation**

   **Nuclear Regulation Authority and other related organizations**

2) **Senior nuclear engineers who manage nuclear facilities**

   **Nuclear power plants and nuclear fuel cycle facilities**

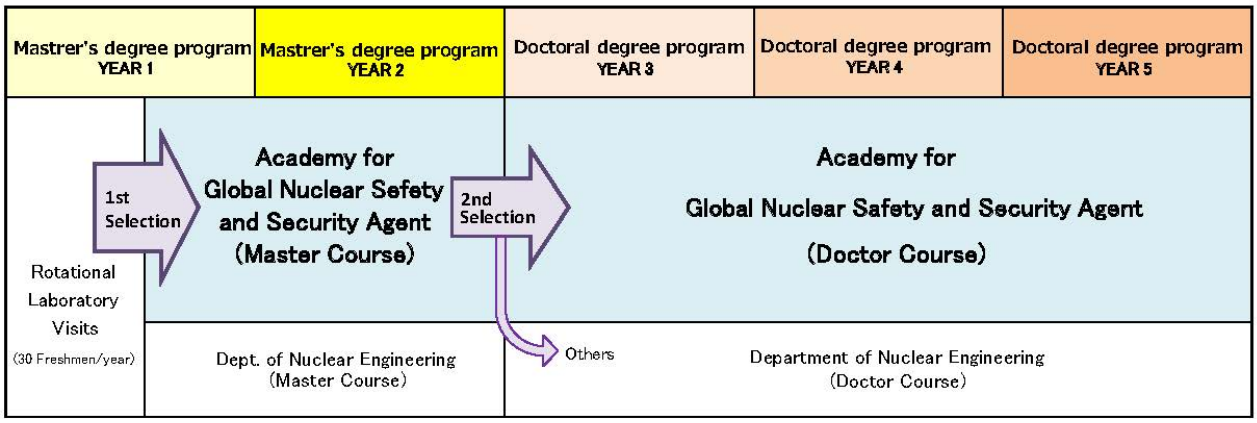
3) **Senior officers of international atomic organizations**

   **International Atomic Energy Agency (IAEA) and other international organizations with high-quality expertise**

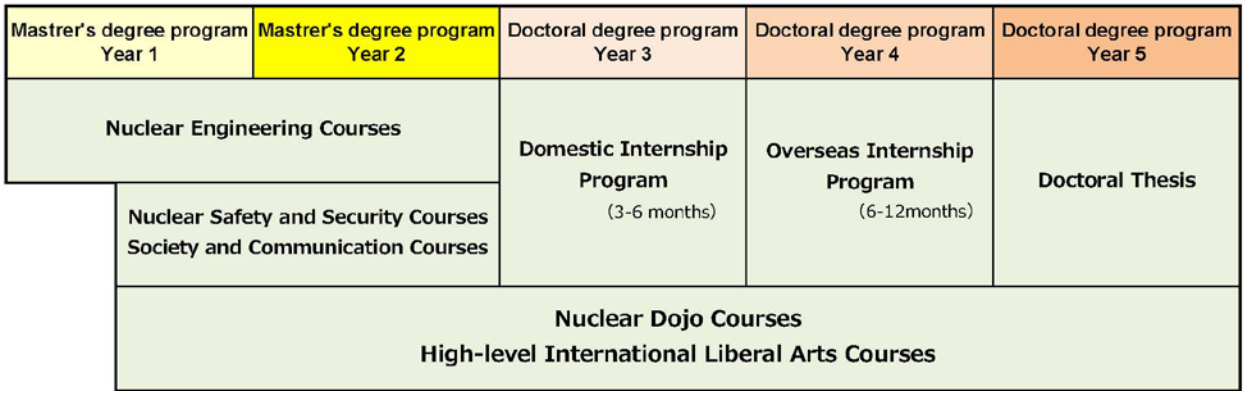
4) **Leaders of nuclear energy in other countries, including Asia**

# Educational System of Safety and Security Course

## Two-stage Selection for Higher Education




## Curriculum




## “Global Leaders”

**with extensive knowledge and strong leadership as well as expertise in nuclear power**

**High Professionalism** + **High Sociability**

# Curriculum Plan

## Basic & Specific Course in Nuclear Engineering

Nuclear Reactor Theory, Nuclear Fuel Cycle Engineering, Nuclear Safety Engineering, Radiation Biology and Medicine, Nuclear Reactor Physics Laboratory, Experiments for Nuclear Fuel Debris and Back-end Fuel , Acts and Regulations on Atomic Energy, Global Nuclear Security, Experiments for Materials Related to Decommissioning , etc.

## Social/Communication Courses

Ethics for Nuclear System Development, Nuclear Engineering Volunteer Activities, Risk Communication

## Nuclear Safety and Security Courses

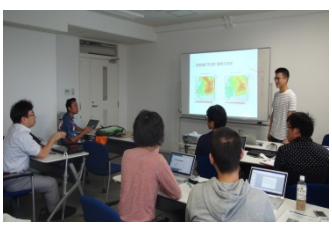
Measurement of Environmental Radiation, Simulation of Severe Nuclear Accidents, Environmental Dynamics of Radioactive Nuclides, Nuclear Security Training

## High-Level International Liberal Arts Courses

International Politics, International Laws, Economics, Philosophy, History, Art, Culture, English, French

## Internship Subjects

Global Nuclear Internship in Japan (3-6 months),
Global Nuclear Internship in Foreign Countries (6-12 months)




# Characteristics of the Program

## 1) Rotational laboratory visits

**Already implemented since October 2008 for Master course students.**

## 2) Moving to the residential "DOJO" dormitory for Global Nuclear Safety and Security Agents (Dormitory fee is free)

**Living and learning together among other students and instructors.**

## 3) A two-stage selection test process for higher-level education

**30 freshmen ⟶ 1st selection test**
**10 applicants (At the time of enrollment in DOJO)**
**⟶ 2nd selection test**
**Several applicants (At the time of enrollment in Doctor course)**

## 4) Emphasis on coursework for Doctor course

**Master course + Doctor course = more than 50 credits coursework in total**

## 5) Domestic and overseas internship

**3-6 months for domestic + 6-12 months for overseas**

## 6) High-level international liberal arts courses

**International Politics, International Laws, Economics, Philosophy, History, Art, Culture, English, French**

## 7) Benefit packages (Continuous support has yet to be decided after April 2018.)

**-Exempt from payment for "DOJO" dormitory fee**

**-Incentive payment**
**Master course (Benefit period 2 years) : 120,000 yen/month (Max.)**
**Doctor course (Benefit period 3 years) : 200,000 yen/month (Max.)**

# DOJO for Global Nuclear Safety and Security

## Tokyo International Exchange Center

**Tokyo International Exchange Center**
http://www.jasso.go.jp/tiec/index_e.html

### ■ Access Map ■

5 minutes walk from "Fune-no-Kagakukan"station on Tokyo Waterfront New Transit "Yurikamome" line

15 minutes walk from "Tokyo Teleport" station on "Rinkai" line

### ■ Location ■

Tokyo Academic Park, 2-2-1 Aomi, Koto-ku, Tokyo 135-8630, Japan

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## Tokyo International Exchange Center provides a high-quality living environment.

Studio type room 30m$^2$

EQUIPMENT
Shower (Bathtub), Toilet, Washstand, Bed, Refrigerator, Kitchen with IH heater, Desk, Chair, Bookshelf, Wash and drying machine, Air-conditioner, Telephone, Interphone

## Common use facilities for residents

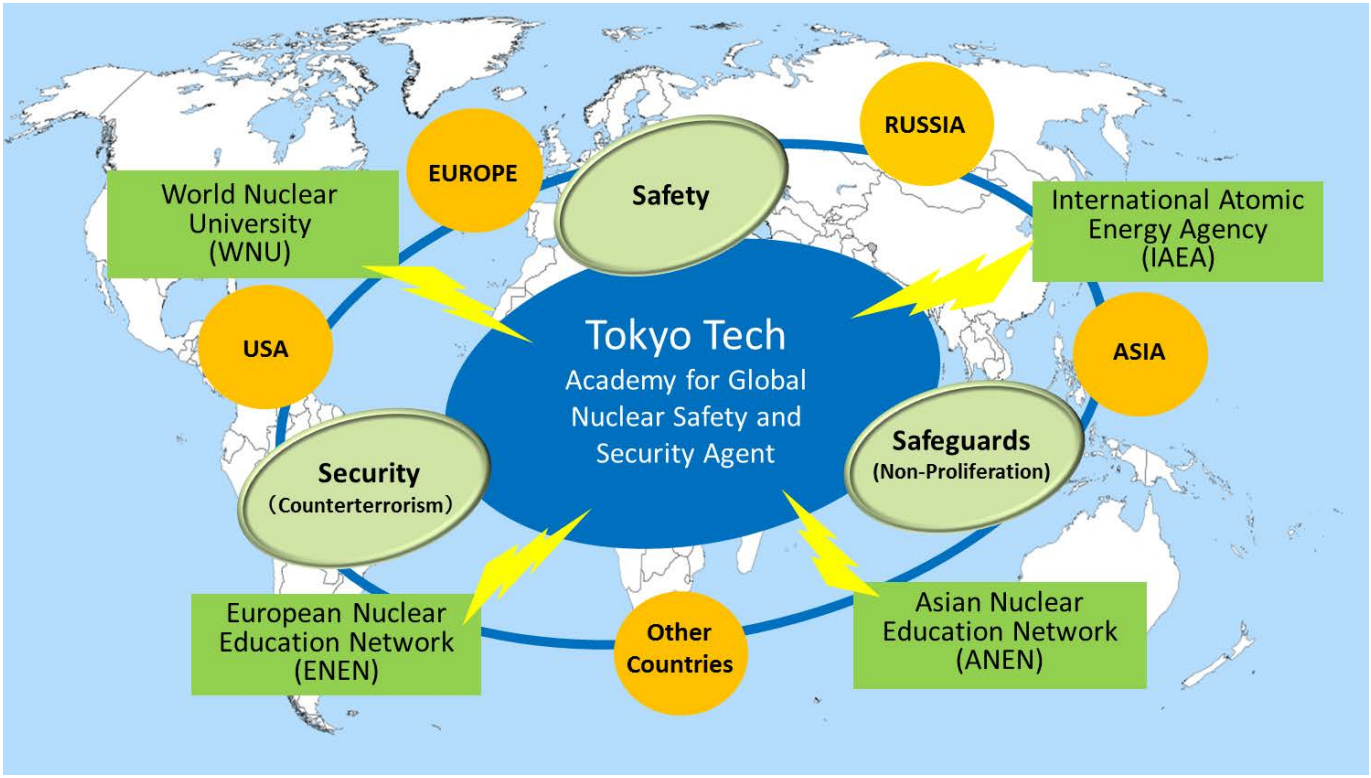
- Lounges (each floor)
- Study Rooms
- Seminar Room
- 24-hour convenience store
- Gym
- Training Room
- Japanese-style room

## Neighborhood facilities and events

- Fuji Television Network, Inc.
- DiverCity Tokyo Plaza
- The Giant Sky Wheel in Palette Town
- Tokyo Wangan police station
- Ooedo-Onsen Monogatari
- Tokyo Bay Grand Fireworks Festival in August
- Oktoberfest

…and more!

# Global Nuclear Education Network

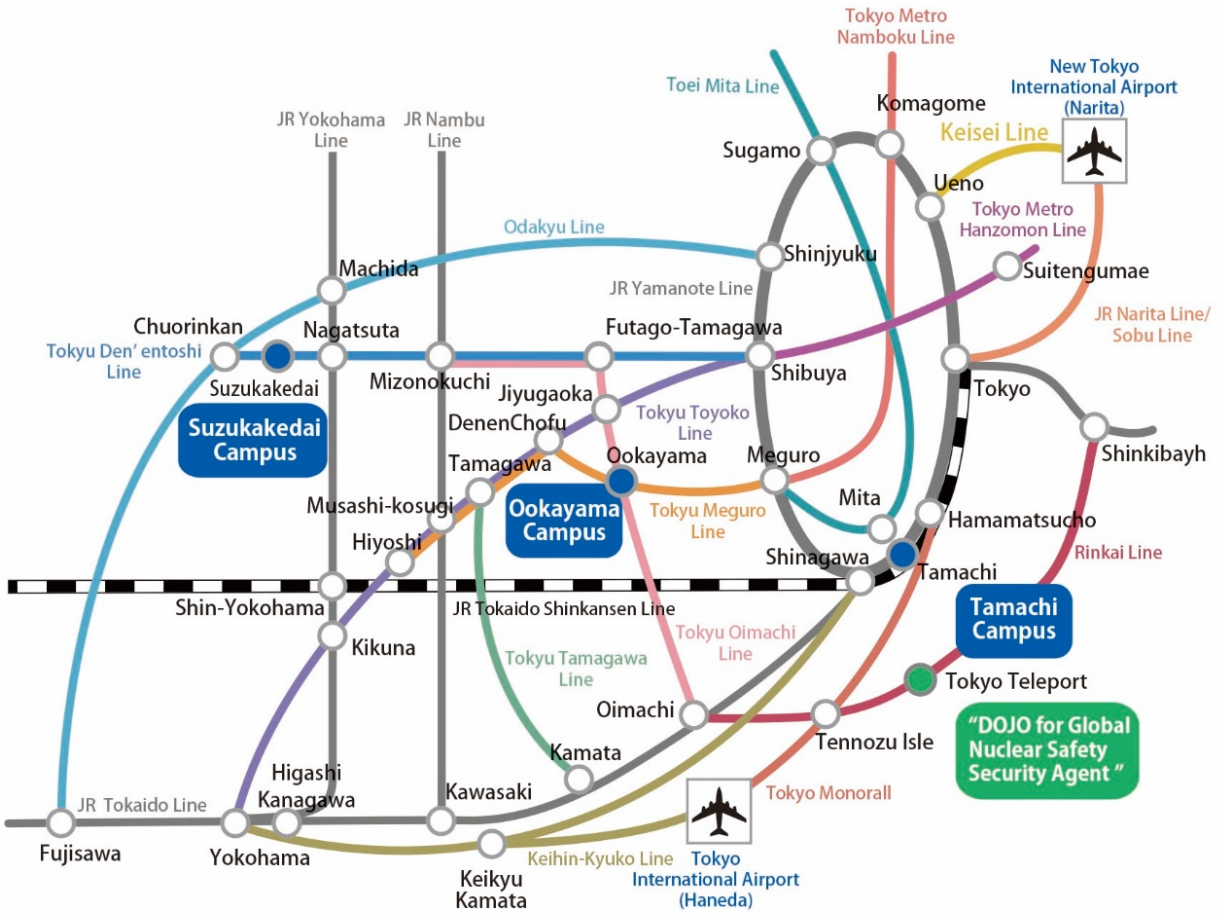



In nuclear power and related fields, the Academy is working to foster human resources with extensive knowledge and strong leadership who can work domestic and overseas as global leaders.

# ACCESS INFORMATION

## MAP

- **The Ookayama Campus** is a one-minute walk from Ookayama Station
- **The Suzukakedai Campus (former Nagatsuta campus)** is a 5-minute walk from Suzukakedai Statin
- **The Tamachi Campus** is a 2-minute walk from Tamachi Station




## Inquiry office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