OF NUCLEAR
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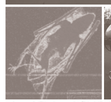
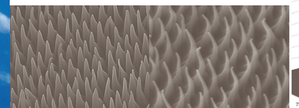
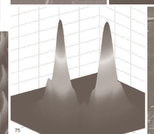
Challenging Global Issues







nem 原子力国際専攻
Nuclear Engineering and Management

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# DEPARTMENT OF NUCLEAR ENGINEERING AND MANAGEMENT

## SCHOOL OF ENGINEERING THE UNIVERSITY OF TOKYO

## 東京大学 大学院工学系研究科

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| Department Guidance |

DEPARTMENT
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# Characteristics of Nuclear Engineering and Management

## 1. Excellent Environment for Research and Education

- ☐ We pride ourselves on our research excellence in various fields, including nuclear engineering, physics, chemistry, electrical and electronic engineering, medical engineering, mechanical engineering, bioengineering, and disaster engineering.
- ☐ We possess many experimental facilities in Hongo (main), Asano, and Tokai districts of the University of Tokyo.
- ☐ Students and faculty members actively participate in domestic and international joint research programs.
- ☐ We support opportunities for students to take internships and attend international conferences.

## 2. Students from Diverse Backgrounds

- ☐ Students come from diverse academic backgrounds such as engineering, science, and social sciences.
- ☐ About 25% of students are from abroad with various nationalities.
- ☐ Fluent Japanese language skills are not mandatory, and lectures and research supervision are generally provided in English.
- ☐ Numerous career paths exist after graduation.

## 3. Global Networks and International Collaboration

- ☐ Additional degree programs can be taken at partner universities such as the Ecole des Mines de Nantes in France.
- ☐ Domestic and international internship programs with financial support (e.g., IAEA, OECD/NEA, AREVA, UC Berkeley) are available.
- ☐ Our curriculum is certified by the International Atomic Energy Agency (IAEA), and those who meet the requirements for completion will receive the completion certificate of "IAEA Nuclear Technology Management Program".

# Curriculum & Course model

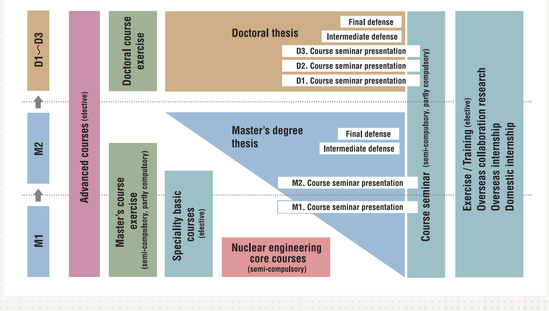
Lecture courses of the department are categorized into (1) Nuclear Engineering Core Courses, (2) Specialized Basic Courses, and (3) Advanced Courses. All courses are taught in English. In addition to the classroom courses, there are: (4) Course Seminars/Practical Classes/Laboratory Sessions to provide students with hands-on learning experience. In addition, special omnibus-format lectures are presented by external lecturers from time to time.

The first year of Master's program starts with taking "(1) Nuclear engineering core courses" which introduce a wide range of engineering and social science topics. "(2) Specialized basic courses" provide students with a systematic knowledge about nuclear safety, energy, and radiation science, applications. Students have the opportunities to develop advanced knowledge related to nuclear engineering by "(3) Advanced courses".

In addition to classroom lecture, students participate in "(4) Course Seminars/Practical Classes/Laboratory Sessions" to learn how to manage a research project responsibly. At course seminars, all students are required to give a research presentation once a year about the progress of your masters or doctoral thesis.

The department participates in management of Resilience Engineering Research Center established in April 2013 (http://rerc.t.u-tokyo.ac.jp/). Students have the opportunity to take an optional educational program "(5) Transdisciplinary Education Program on Resilience Engineering" in addition to the standard program.

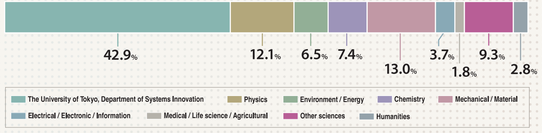
Overview of the Curriculum of the Department of Nuclear Engineering and Management




# Background of Students

This department accepts students from various universities. The specialties of my department of study and undergraduate school also vary. It is also characterized by the large number of foreign students from overseas, and the strength of this department is to learn in an international environment.

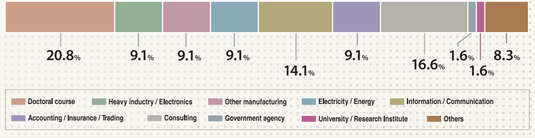
Backgrounds of master's course students — Over the past five years ( Entrance from 2019 to 2023 )




# Career

The skills that are developed by studying nuclear engineering can be applied to various fields. The studies conducted at the Department of Nuclear Engineering and Management are closely linked to several fields in science and engineering. Therefore, many competent specialists who are working at the forefront of society have been trained by our department, and our alumni network is spread out all over the world. Studying at our department will be very beneficial to the future careers of our students. Our alumni work in diverse fields including manufacturing, service, finance, IT, consulting, governmental agencies, foundations, universities, and research institutions.

Careers after completing the master's degree — Over the past five years ( Graduated from 2018 to 2022 )




## Main places of employment

**Heavy industry / Electronics industry**
IHI, Toshiba, Hitachi, Hitachi High-Tech, Mitsui E&S Machinery, Koninklijke Philips

**Other manufacturing industry**
TDK, Keyence, Nuclear Fuel Industries, Chiyoda Corporation, Chiyoda Technol, Tower Partners Semiconductor, Texas Instruments Japan, Air Liquide Japan, Nippon Steel, Nippon Medphysics, Nuclear Development, Fujifilm, Micron Memory Japan, Ricoh., Isuzu Motors, Panasonic HD

**Power / Energy industry**
Kansai Electric Power Company, Chugoku Electric Power Company, Organization for Cross-regional Coordination of Transmission Operators, Tokyo Gas, Tokyo Electric Power Company Holdings, Hitachi-GE Nuclear Energy, Toshiba Energy Systems & Solutions Corporation

**Information / Telecommunications industry**
ACES, AWS Japan, Dassault Systèmes, NTT Communications, oRo, Sunny, Simplex, Software Cradle, Softbank, IBM Japan, Japan Communications, Nippon Telegraph and Telephone East, Future, Plus Class, Huawei

**Finance / Insurance / Trading industry**
JP Morgan Securities, Itochu Corporation, Daiwa Securities, Deutsche Bank, Nomura Securities, Sumitomo Mitsui Banking Corporation, Mitsubishi UFJ Trust System

**Consulting service**
Bain & Company, PWC Consulting, Accenture, Kozo Keikaku Engineering, Daiwa Institute of Research, Deloitte Tohmatsu Consulting, Japan NUS, Nomura Research Institute, McKinsey & Company Inc, Japan, Mitsubishi Research Institute, Recruit, Roland Berger

**Government agency**
Pharmaceuticals and Medical Devices Agency, Nuclear Regulation Authority

**University / Laboratory**
Asia Pacific Energy Research Centre, Chinese Academy of Engineering Physics, Khulna University of Engineering & Technology, Singapore Nuclear Research and Safety Initiative, Tribhuvan University, National Research and Innovation Agency, National Institute of Advanced Industrial Science and Technology, Central Research Institute of Electric Power Industry, University of Tokyo, Tokyo Institute of Technology, Toyota Central R&D Labs, Tokyo Metropolitan Industrial Technology Research Institute, Japan Institute of Energy Economics, Japan Atomic Energy Agency, RIKEN, Japan Aerospace Exploration Agency

**Other**
Entrepreneurship, High School Teacher, Konami Digital Entertainment, Tokai TV, Hakuhodo, PC Depot Corp., Team Lab

# Message from students & graduates

## A fulfilling research life in a privileged academic environment

*Yoshiki TANI*
***Master course completed on March 2021***

I was enrolled in Department of Nuclear Engineering & Management from E & E Course in Department of Systems Innovation. Fujii-Komiyama laboratory which I am belonging to mainly conducts large-scale numerical computational simulation analysis on energy systems and resilience. In my graduation thesis, I developed a world's most advanced global energy model in Fujii-Komiyama laboratory and analyzed the possibility of zero $CO_2$ emissions in global energy sector. The structure of the global energy model is an extremely difficult mathematical model without advanced and large amount of knowledge for energy problems. Thanks to the careful guidance of excellent seniors and academic advisors in the laboratory, however, I gained interesting results ahead of the world. The results of my graduation thesis showed interests by faculty members in E & E Course in Department of Systems Innovation, and I was able to receive the Japan Atomic Energy Society Fellow Award. In Department of Nuclear Engineering & Management, you can definitely send a fulfilling research life in such a privileged academic environment. From now on, I will work hard with excellent colleagues, and would like to hold on to the world's most advanced research results and try hard to be recognized.

## You can acquire the world-class abilities in this department

*Yuki Mori*
***Doctoral course completed on September 2021***

After I graduated from SDM course in department of systems innovation, I was interested in research to combine numerical simulation and computer graphics, so I went to Sakai-Lab, which is in the department of nuclear engineering and management. The Sakai Laboratory has huge research achievements in multi-physics simulation, and the latest computer hardware and experimental equipment are introduced to the laboratory. The Sakai laboratory develops state-of-the-art physical models and try to reveal physical phenomena of multiphase flows. As international research activities in the laboratory, prominent researchers visit the laboratory from around the world, international seminars are held, and international collaborative research is performed. I was given an international collaborative research theme with University of Surrey in the UK and stayed University of Surrey for a month. It was worthwhile to actively discuss with co-workers during stay and improve the quality of the research, and a paper summarizing the research results were published in famous international scientific journals. In addition, I got a total of 8 awards at academic conferences both in Japan and overseas in the master's program. These research results were highly regarded, and I received the dean's award (an outstanding research award) when I got a master's degree. I decided to go to Ph.D. course, because I would like to improve my research. In addition, I will be selected the research fellowships for young scientists in JSPS when I go to Ph.D. course.Since all lectures are held in English at this department, you can increase your communication skills in English. You can also experience the global diversity through the communication with many international students. Consequently, I hope that you will be able to acquire world-class broad perspectives and abilities. We welcome you to acquire the world-class ability in our department.

## Fruitful student life in Nuclear Engineering and Management

*Yuri YOSHIHARA*
***Doctoral course completed on March 2019***

Since a research work for radiation measurement that I conducted for my graduate thesis was so exciting to me, I decided to enter the department of Nuclear Engineering and Management in order to explore radiation measurement more. I could improve communication skill in English because the all lectures of this department were taken in English. Besides, usual conversation with students from foreign countries or different backgrounds helped me with understanding diverse cultures and thoughts. About the research work, I belonged to Prof. Takahashi's laboratory, one of the world-leading laboratories in radiation measurement field. I had been working on a research of gamma-ray imaging technologies for visualizing the distribution of radioactive cesium spread by the accident of Fukushima Daiichi Nuclear Power Plant, which was a challenging topic proposed by my professor. Through working hard and encouraging each other with laboratory members, I was able to acquire deep expertise about advanced technologies with fulfilling student life. Because I was adopted as one of fellowship members (DC1) from Japan Society for Promotion of Science (JSPS), I could concentrate my research work under economical support from JSPS. Besides, during the doctoral course, I could have an opportunity to join the collaboration research with UC Berkeley and Lawrence Berkeley National Laboratory for almost six months under the support of long-term overseas travel from a program for leading graduate schools (GSDM). I think my vision has expanded through the experience of the studying abroad, and this experience also helped me with growing as researcher. Looking back on my five-year student life at this department, I am satisfied with having such a fruitful time to acquire knowledge and experience through connecting with many people. After graduation, fortunately I obtained a research position of a private company where I can take advantage of my expertise cultivated through the student life. In the company, I would need to work together with various people more flexibly, but I hope to contribute to society through developing radiation-measurement technologies by utilizing the experience gained in this department