

◆Department of Nuclear Engineering

1. Department Outline

Growing attention has been placed on nuclear energy as an ultimate measure for reduction of fossil fuel consumption and CO₂ emission. Under the circumstances of global warming and the price hike of oil, gas and coal, a number of countries have been considering the implementation of nuclear power plants. The key factor of the nuclear energy development is the development of human resources. Our original course of international nuclear engineering has been established in 1993. Since then, a number of students have joined us from many countries and graduated from our course. They are actively contributing to the development of industries and technologies in Japan or in their own countries. This graduate course provides with core curriculum for nuclear reactor engineering and fuel cycle technologies and also covers extended nuclear energy, such as beam, accelerator, plasma sciences, nuclear fusion, energy and environment, and social relations.

2. Graduation Requirements

【Master's degree】

For a Master's degree, a student must take credits and satisfy the other requirements as follows:

- (1) Total credits required for graduation
 - 34 credits or more from the Graduate school courses.
- (2) Requirements in credits
 - 8 credits or more from Research Courses
 - (i) 4 credits from Seminar Courses *¹
 - (ii) 4 credits or more from Graduate Research Courses
 - 24 credits or more from Courses by Departments
 - (i) 22 credits or more from Departmental Courses
 - (ii) 2 credits or more from Courses in Other Departments
 - 2 credits or more from Liberal Arts and General Education (G)*², *i.e.*, International Communication (G), Interdisciplinary Courses (G), Interdepartmental Courses (G), Arts and Humanities (G), Career Development Courses (G), and Courses for International Students (G)
- (3) Thesis

A student must take a midterm examination and pass the final examination for a master thesis research.

*1: Seminar in each term must be taken. 8 credits are the requirement for the normal study period of master study, *i.e.*, two years, or four semesters. If the student completes the master study in less than 4 semesters, the required credit is reduced according to the number of spent semesters, *e.g.*, 4 credits for two semesters (minimum), and 6 credits for 3 semesters.

*2: Graduate

【Doctoral degree】

For a Doctoral degree, a doctoral candidate must take credits and satisfy the other requirements as follows:

- (1) Credit from Seminar Courses in each term
- (2) 6 credits or more from Departmental Courses in principle
- (3) The candidate must take a midterm examination in English for a Doctoral thesis research.
- (4) The candidate must make presentation of his/her doctoral thesis.
- (5) The candidate must pass the final examination for his/her Doctoral thesis.
- (6) The candidate who is enrolled in the doctor course in April in 2013 or later must take an external English examination and get the score higher than that corresponding to TOEIC 730.

The candidate who satisfies the above requirements is awarded a Doctoral degree.

3.Course List of Nuclear Engineering

Course	Department offering course*	Course Number	Credit			Semester S: Spring A: Autumn	Opening year a: Annually e: Even o: Odd	Category* Remarks
Seminar in Nuclear Engineering I, III	NE	71701, 70703	0	1	0	S	a	(1), Required in Master's Course
Seminar in Nuclear Engineering II, IV	NE	71702, 70704	0	1	0	A	a	(1), Required in Master's Course
Seminar in Nuclear Engineering V, VII, IX	NE	71801, 71803, 71805	0	2	0	S	a	(1), Required in Doctoral Course
Seminar in Nuclear Engineering VI, VIII, X	NE	71802, 71804 71806	0	2	0	A	a	(1), Required in Doctoral Course
International Internship in Nuclear Engineering I – IV	NE	71101- 71104	0	2	0	S	a	(2)
International Internship in Nuclear Engineering V – IIX	NE	71105 - 71108	0	2	0	A	a	(2)
Internship in Nuclear Engineering I,	NE	71118	0	1	0	S	a	(2)
Internship in Nuclear Engineering II	NE	71119	0	2	0	S	a	(2)
Internship in Nuclear Engineering III	NE	71120	0	1	0	A	a	(2)
Internship in Nuclear Engineering IV	NE	71121	0	2	0	A	a	(2)
Nuclear Reactor Physics	NE	71090	2	1	0	A	a	(3), B
Nuclear Chemistry and Radiation Science	NE	71043	2	0	0	A	o	(3), B
Reactor Thermal Hydrodynamics	NE	71044	2	0	0	A	o	(3), A
Nuclear Energy Systems	NE	71045	2	0	0	A	e	(3), B
Nuclear Reactor Design and Engineering	NE	71002	2	0	0	A	e	(3), A
Nuclear Reactor Safety	NE	71046	2	0	0	S	o	(3), B
Energy Systems and Environment	NE	71049	2	0	0	S	e	(3), B/I
Basic Nuclear Physics	NE	71062	2	0	0	A	o	(3), B
Accelerators in Applied Research and Technology	NE	71063	2	0	0	S	o	(3), A
Plasma Science	NE	71064	2	0	0	A	o	(3), I
Nanomaterials Science	NE	71066	2	0	0	A	o	(3), B
Nuclear Materials Science	NE	71052	2	0	0	A	e	(3), A
Reactor Chemistry and Chemical Engineering	NE	71083	2	0	0	S	e	(3), A
Biological Effects and Medical Application of Radiation	NE	71128	2	0	0	A	e	(3), I
Specific Interdisciplinary Subject in Nuclear Engineering A	NE	71129	2	0	0	S	a	(3), B ☆
Specific Interdisciplinary Subject in Nuclear Engineering B	NE	71130	2	0	0	A	a	(3), B ☆
Radiation Physics	NE	71137	2	0	0	A	e	(3), B
Experiments for Reactor Physics	NE	71700	0	0	2	S	a	(3), B
Introductory Experiments in Nuclear Engineering	NE	71092	1	0	1	S	a	(3), B
Nuclear Engineering Off-Campus Project I	NE	71511	0	4	0	S	a	(3), B
Nuclear Engineering Research Skills I	NE	71138	0	2	0	S	a	(3), B
Nuclear Engineering Research Skills II	NE	71139	0	2	0	A	a	(3), B
Nuclear Engineering Off-Campus Project II	NE	71512	0	4	0	A	a	(3), B

* B: Basic, A: Applied, I: Interdisciplinary, (1): Seminar Courses, (2): Graduate Research Courses, (3): Departmental Courses
NE: Dept. Nuclear Engineering

*Subjects marked ☆:Only the ACEEES students can take this course. In order to promote interdisciplinary research on campus, students are required to take/register courses provided by designated other majors/programs rather than their own majors/programs.