

English-Japanese Bilingual Education Course for International Students

I. Outline of the course

This course accepts international students who are interested in science and technology, are proficient in English, and aim to pursue a career related to Japan, such as a position in a Japanese company. It also prepares the students, via well-designed educational curricula to acquire essential skills in Japanese as well as in their respective disciplines, to become professionals in the field of science and engineering where they will play an active role in the global society.

This course was planned in preparation of the reorganization of the faculty and the graduate school, scheduled in 2018, and will be available for all the departments of the faculty: Physics and Materials Science; Chemistry; Earth Science; Mathematics; Information Systems Design and Data Science; Mechanical, Electrical and Electronic Engineering; and Architectural Design. The educational curricula of these departments will also be renewed to meet the demands of our future society, but also keeping consistency with the respective graduate programs.

Intensive courses for studying Japanese are placed in the freshman and sophomore years so that the students can participate in courses taught in Japanese as soon as possible. In particular, in the freshman year foundational courses for science and technology and parts of the general education courses are given in English. After that technical courses of each department are given mainly in Japanese. With these the students are prepared to become professionals being active in the global society.

We are in an age when professionals who have a wide range of fundamental technical knowledge and are proficient both in English and Japanese are more and more demanded especially from the industry. This course has been planned to respond to such a strong demand from the society. We hope that those students will join the course who are interested in Japan and eager to study within the field of science and engineering.

II. Features of the course

Department	Bachelor degree	Application requirements on Japanese and English*
Physics and Materials Science	Bachelor of Science and Engineering	Japanese: JLPT** Level N4 or higher English: TOEFL PBT523(CBT 193, iBT 70) or higher Or IELTS overall band score 5.5 or higher
Chemistry		
Earth Science		
Mathematics		
Information Systems Design and Data Science		
Mechanical, Electrical and Electronic Engineering		
Architectural Design		

*For other application requirements, please see the application guidelines.

**Japanese Language Proficiency Test

1. Students can select their programs from a variety of fields.

Since this course runs in all the seven departments of the faculty, the students can choose their major from a variety of specialized fields.

2. Well-designed educational curriculum for Japanese language

Although most Japanese university's undergraduate programs for international students impose level N1 of Japanese Language Proficiency Test as a requirement for admission, the level required for this course is N4 or higher. After entering the course, intensive Japanese language education is offered in the freshman and sophomore years, so that the students can participate in courses taught in Japanese as soon as possible. The students are prepared, via a well-designed Japanese language educational curriculum taught by professional teachers, to be able to work at Japanese companies after graduation. Also, most credits of these courses for Japanese language education are admitted as ones required for graduation, so that the students can graduate in four years, normal length of the course of study, without overload.

3. Foundational courses for science and engineering and part of general education courses are taught in English.

Introductory technical courses taken especially in the freshman year are given in English. Here students can learn fundamental technical topics from a variety of specialized fields. The university also offers several courses of general education taught in English. These courses are prepared in such a way that the education of the course allows for a smooth progression in a period when the students' Japanese proficiency is developing.

III. Mission of the Course

The mission of the course is to nurture human resources in science and engineering who will play an active role in the global society, by providing well-designed education in Japanese as well as the respective disciplines for international students who are proficient in English.

IV. Requirements for graduation

The curriculum requires 124 credits and is organized as follows:

- Basic education: 12 credits, including 8 credits from the category of Japanese, 2 credits from the category of Health and Sports or Art and Culture, and 2 credits from the category of Information Science.
- General education: 14 credits, including 8 credits from the category of Japanese Culture, Society and Nature.
- Specialized education: 4 credits from the category of Common Courses for Natural Science and Technology Faculties, 22 credits from the category of Fundamental Courses for Science and Engineering, 34 credits from the category of Required Specialized Courses, 22 credits from the categories of Elective and Free Specialized Courses.
- 8 credits from the category of Free Electives I and 8 credits from the category of Free Electives II.

+Common Courses for Natural Science and Technology Faculties (taught in English)

Environmental and Sustainability Sciences
Introduction to Agriculture and Forestry
Basic Biology

+Fundamental Courses for Science and Engineering (taught in English)

Physics

Materials Science

Fundamental Chemistry

Fundamental Analytical Chemistry

Earth and Earth Resource Science

Geoenvironmental Science

Calculus I

Calculus II

Introduction to Java Programming

Computer Hardware Basics

Introduction to Mechanical Engineering

Introduction to Electronics and Electrical Engineering

Architectural design

V. Departments

Department of Physics and Materials Science

1. We prepare the graduates to become professionals who have a knowledge of physics ranging from fundamentals to applications and be able to contribute to uncovering the mechanisms of physical phenomena and functions, creating advanced metals and energy related materials, and developing devices using advanced materials.
2. The graduates are expected to have: a knowledge of basic physics, materials engineering, and device engineering based on them; an ability to apply the knowledge obtained to develop our society; and an ability to communicate effectively in the global society.
3. The graduates are prepared for careers such as engineers at manufacturers of metals, electrical and electronic devices, and semiconductors, engineers at information technology companies, and public servants, or for advanced degrees.

Department of Chemistry

1. We prepare the graduates to become professionals who have a knowledge of chemistry ranging from fundamentals to applications and work using materials chemistry such as: research of aqueous environments, e.g., Shinji Lake; research

- on decreasing environmental loading; research on effective utilization of recyclable resources and energy; and development of functional materials.
2. The graduates are expected to have: a fundamental knowledge of basic chemistry, environmental chemistry, and functional materials chemistry; an ability to apply the knowledge to develop our society; and an ability to communicate effectively in the global society.
 3. The graduates are prepared to become engineers of various industries and material manufacturers mainly including manufacturers of chemicals, or to pursue advanced degrees.

Department of Earth Science

1. On the base of geology emphasizing field works, we prepare the graduates to become professionals in the fields of geo-resource development, geo-environmental research, geo-disaster prevention as well as civil engineering and construction. Students will acquire an ability and concept of Earth history to understand the system of Earth Science.
2. The graduates are expected to have: a fundamental knowledge of geoscience, geoenvironmental science, and geo-disaster science; an ability to apply the knowledge to develop our society; and an ability to communicate effectively in the globalizing society.
3. The graduates are prepared for careers such as public officials (related to geology, environment, and civil engineering), geological survey and analysis consultants, geotechnical consultants, technicians for geo-resource exploration such as oil and mines, geo-energy development, geoenvironmental survey and analysis, civil engineering and construction, high school teachers, curators, and for advanced degrees in graduate school.

Department of Mathematics

1. We prepare the graduates to become professionals who have learned a systematic knowledge and approaches of mathematical sciences, have an ability to apply them to other fields, and be able to solve various problems in our society.
2. The graduates are expected to have: a knowledge of basics of mathematical sciences; an ability to apply the knowledge to developing the society; and an ability to communicate effectively in the global society.
3. The graduates are prepared for such careers as financial institutions, information technology companies, manufacturing companies, government, or for advanced

degrees.

Department of Information Systems Design and Data Science

1. We prepare the graduates to become professionals who have a knowledge of informatics ranging from fundamentals to applications and are able to offer plans and proposals for solving social challenges and realizing social needs in terms of information technology in such fields as data science, information security, and internet of things.
2. The graduates are expected to have: a knowledge of basics of informatics; an ability to apply the knowledge to developing the society; and an ability to communicate effectively in the global society.
3. The graduates are prepared for careers such as engineers at information technology companies, telecommunications companies, information related department of ordinary companies, or for advanced degrees.

Department of Mechanical, Electrical and Electronic Engineering

1. We prepare the graduates to become professionals who have a wide range of knowledge of mechanical engineering and electrical and electronic engineering and are able to contribute to building advanced social infrastructures and manufacturing in the age when being intelligent and having high functionality are required.
2. The graduates are expected to have: a knowledge of fundamentals of mechanical engineering and electrical and electronic engineering; an ability to apply the knowledge to developing the society; and an ability to communicate effectively in the global society.
3. The graduates are prepared for careers such as engineers in manufacturing industries (related to general machinery, precision machinery and equipment, electronic parts, automobiles, electric machinery and apparatus), electric power and electricity industries, telecommunication business, and transportation, or for advanced degrees.

Department of Architectural Design

1. We prepare the graduates to become professionals who have a knowledge of structure, environment, planning, and design in architecture and be able to contribute to building a human- and environment-friendly society in the fields of architecture and town architect.

2. The graduates are expected to have: a fundamental knowledge of architecture; an ability to apply the knowledge to developing the society; and an ability to communicate effectively in the global society.
3. The graduates are prepared for such careers as engineers at building and housing companies, architectural design offices, and government, or for advanced degrees.