

# The Faculty of Engineering Science at Akita University will be reborn as the “Faculty of Integrated Science and Engineering for Environments”

April 2025



## Admission Policy (Excerpt)

### The image of individuals we nurture

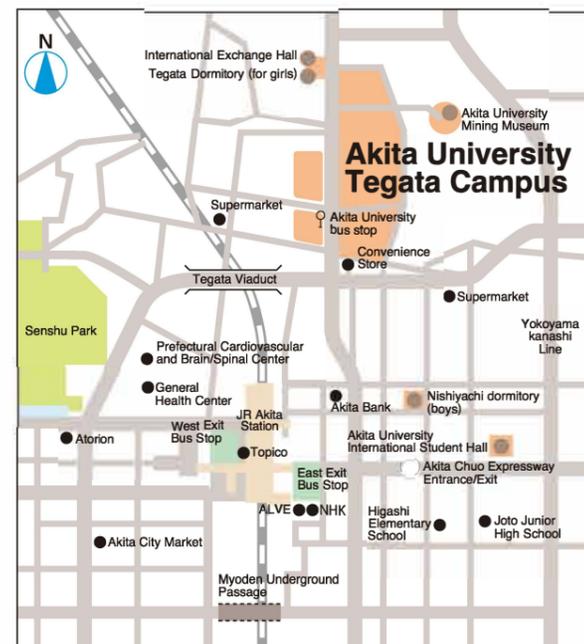
We develop human resources capable of acquiring high levels of expertise in science and engineering and addressing challenges in a flexible and comprehensive manner through co-creation with others.

We train human resources capable of acquiring accurate knowledge of the natural environment and environmental technology and contributing to solving environmental issues through science and technology.

### The image of individuals we look for

- (1) People who have acquired the fundamental academic skills necessary for studying science and technology
- (2) People who are interested in realizing a green society and utilizing digital technology, and who can actively engage in self-learning
- (3) People with a desire to contribute to global and regional development as researchers and engineers

## Access



### ■ To Akita

#### ● By Airplane

- From Sapporo — Approx. 1 hour
- From Tokyo — Approx. 1 hour
- From Nagoya — Approx. 1 hr. 30 min.
- From Osaka — Approx. 1 hr. 30 min.

#### ● By Shinkansen

- From Tokyo — Approx. 4 hours
- From Sendai — Approx. 2 hrs. 15 min.

### ■ From JR Akita Station to Tegata Campus of Akita University: Approx. 1.3 km

On foot: 15 minutes from the East Exit of Akita Station

By bus: Akita Station West Exit bus stop

Akita Chuokotsu bus from bus stop No. 12

Daigaku Byoin via Tegatayama Line

Get off at “Akita Daigaku-mae” after approx. 5 min.

## Akita University Graduate School of Engineering Science

### General Affairs

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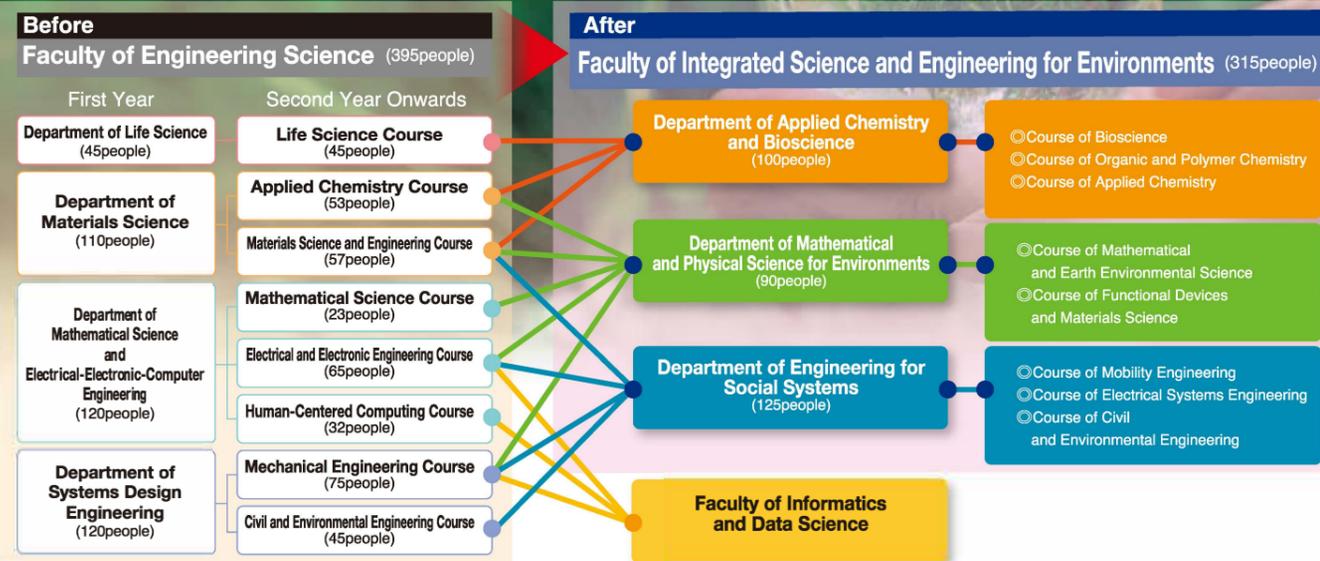
The role of science and technology in addressing global environmental issues has been growing over time. Furthermore, there is an increasing demand for “a society where each individual can pursue diverse forms of happiness.” To realize this demand, it is necessary for people with diverse expertise to come together and collaborate in addressing various social challenges.

The Faculty of Integrated Science and Engineering for Environments, which will be established by reorganizing the current Faculty of Engineering Science, will integrate the four departments and eight courses into three departments to enable students to learn the fundamentals and applications of science and engineering in a comprehensive manner, while strengthening education and research in science and technology related to the realization of a green society. The faculty will develop human resources capable of playing an active role in the new era by acquiring solid expertise and fostering the ability to utilize digital technology in specialized fields and the capacity to understand different fields of expertise and cooperate with others.

※The term “green society” was used by then Prime Minister Suga in his policy speech at the Extraordinary Diet Session in 2020 to refer to a society that achieves both decarbonization and economic growth, with a virtuous cycle between the economy and the environment as a pillar of its growth strategy. The human resources needed to realize this vision are called “green human resources.”

## Outline of Faculty Reorganization

We will strengthen education and research related to the realization of a green society and digital technology. The existing "four-department and eight-course system" will be reorganized into a "three-department system."



## Outline of Curricula

- From the first year to the first semester of the second year, students take Liberal Arts and Basic Subjects, as well as "Integrated Science and Engineering for Environments Education Subjects" (compulsory cross-departmental subjects). Starting from the second semester of the second year, students take highly specialized subjects in their respective courses.
- Students are also required to study subjects from other departments to acquire a broad range of cross-disciplinary knowledge regarding the realization of a green society.
- Mathematics, data science, and AI education are made compulsory, enabling students to acquire the ability to utilize digital technology within their own fields of expertise.
- In the fourth year, students develop the ability to address issues comprehensively by researching and making a presentation about the relationship between the specialties they have studied up to the third year and a green society, and by conducting a graduation research utilizing the knowledge they have acquired.

## Department of Applied Chemistry and Bioscience



This department develops human resources capable of contributing to the realization of a green society by studying chemistry and biology and applying knowledge from both disciplines. Graduates can work as scientific engineers in the pharmaceutical and medical device industries that support human health, as well as in the chemical industry, which is transforming toward a decarbonized society.

### Course of Bioscience

This course develops human resources who study the fundamentals of chemistry and biology as well as specialized fields of biology such as molecular biology, cell biology, physiology, and biochemical engineering, and are capable of addressing challenges such as maintaining human health, preserving the natural environment, and bioproduction from a comprehensive perspective integrating chemistry and biology, and with advanced biotechnology.

### Course of Organic and Polymer Chemistry

This course develops human resources who study the fundamentals of chemistry and biology as well as combined specialized fields of organic chemistry, polymer chemistry, biochemistry, and organic materials science, and are capable of contributing to the pharmaceutical, agrochemical, and chemical materials manufacturing industries, the food industry, and testing and analysis laboratories through a comprehensive perspective integrating chemistry and biology, and combined specialized techniques.

### Course of Applied Chemistry

This course develops human resources who study the fundamentals of chemistry and biology as well as specialized fields of chemistry such as inorganic materials science, electrochemistry, reaction engineering, and energy conversion materials science, and are capable of addressing challenges such as the creation of clean energy, environmental purification, and the realization of a decarbonized society through a comprehensive perspective integrating chemistry and biology, and advanced chemical technology.

### Expected Employment Opportunities

- Pharmaceutical
- Medical Equipment
- Food
- Environment
- Chemical



## Department of Mathematical and Physical Science for Environments



This department fosters human resources who will work to realize a green society that continues to grow while coexisting with nature and reducing risks to the environment. Students will acquire deep expertise in the three fields of natural sciences (mathematics, physics, earth science), electronics or materials science, and at the same time become researchers or engineers who are well versed in digital technology.

### Course of Mathematical and Earth Environmental Science

Students specialize in three fields of natural science, and study equations, functions, and the theory of shape and space in the field of mathematics; quantum science in the field of physics; and the mechanisms of the Earth's environment and its constituent materials in the field of earth science.

The course develops data scientists or engineers who can apply the principles of nature to contribute to society.

### Course of Functional Devices and Materials Science

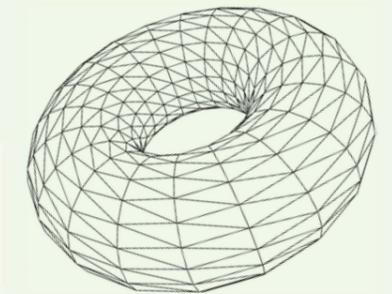
In this course, students study technologies to apply the laws of physics to devices in the field of electronics, and technologies to improve material's functions or create new functions in the field of materials science.

The course develops engineers with expertise of high-performance information and telecommunication devices that contribute to the realization of a sustainable society with environmentally friendly, and of the materials used in these devices.

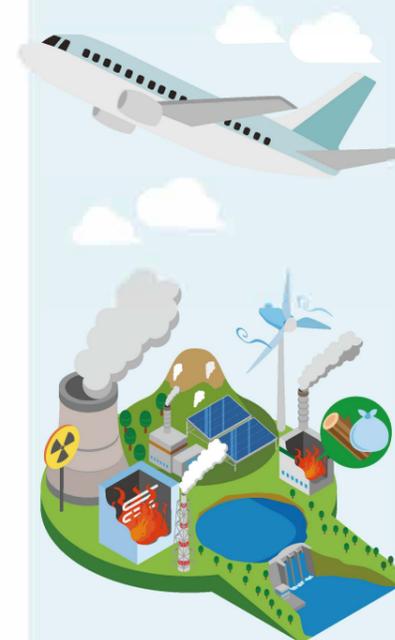


### Expected Employment Opportunities

- Information & Telecommunications
- Financial
- Materials
- Teacher & Public Service Worker
- Semiconductor & Electronic Components



## Department of Engineering for Social Systems



In this department, students can study in depth and specialize in mobility, such as the aircraft and automobiles that are essential to daily life, the materials that comprise them, the electrical systems that contribute to decarbonization, and the social infrastructure that protects people and communities. Graduates can become engineers who will build a sustainable and prosperous society of the future.

### Course of Mobility Engineering

This course develops human resources capable of contributing to the development of new mobility systems such as next-generation aircraft, railways, automobiles, and other mobile vehicles. The course trains engineers and researchers who can contribute to the design and development of advanced mobility systems that will contribute to the realization of a sustainable society by incorporating expertise in materials science and engineering in addition to the four dynamics that form the basis of mechanical engineering.

### Course of Electrical Systems Engineering

This course develops human resources capable of utilizing their expertise in the field of electrical systems to advance environmentally responsive technologies and contribute to the construction of sustainable social systems. The course trains talented human resources for manufacturing and developing vehicles, aircraft, and related electrical equipment, for businesses related to energy infrastructure and the adoption of renewable energy, and for manufacturing and service industries related to electrical, electronic, information and telecommunication industries.

### Course of Civil and Environmental Engineering

This course develops human resources capable of contributing to the construction of environmentally friendly and disaster-resistant social infrastructures such as roads, rivers, ports, and bridges, and to developing resilient and sustainable regional communities based on such infrastructures. The course trains engineers and researchers who can contribute to the design and maintenance of regional social systems that are safe, secure, and convenient for all people, with a global perspective on environmental ethics.

### Expected Employment Opportunities

- Aircraft
- Automotive
- Materials
- Electricity & Renewable Energy
- Construction
- Technical Public Service

