



〈Graduate School of Engineering Science〉  
**● Center for Crossover Education**

**【Facility Purpose】**

Contribute to improvement in quality of both students and teachers through a variety of new initiatives related to practical education in science and technology.

**【Center Activities】**

Study abroad consultations, manufacturing classes for children, techno career seminars etc.



〈Graduate School of Engineering Science〉  
**● Research Center of Advanced Materials for Breakthrough Technology**

**【Facility Purpose】**

Research and development of high functional and advanced materials

**【Areas of research】**

Development of electrodes and catalysts materials for hydrogen production  
 Development of electrode materials for storage batteries  
 Development of electron transport layer materials for solar cells

## University Common Use Facilities for Education and Research



**● Center for Information Technology and Management**

**【Facilities and Equipment】**

- Educational PCs (total 400): PC rooms 1.4, PC rooms A/B, Hondo PC room, Central Library, Medical Library
- \* General Research Building (Information and education) Under construction
- Information services: Web mail, Large-size printer, computing server, Virtual server hosting
- Information network : LAN cable (1-4 Gbps to the floor switch), Wireless LAN, Internet (20 Gbps)

**● Cooperative Research Center**

**【Purpose of Establishment】**

Advance joint research with external organizations to develop Akita University's education and research capabilities. Promote the sharing of intellectual property and the social implementation of intellectual property based on these research results. Promote and contribute to technological development in society.

**● International Center for Research and Education on Mineral and Energy Resources**

**【Purpose of Establishment】**

To promote education and research in the field of natural resources by fostering advanced resource development professionals with an international perspective; work on sustainable resource development, and contribute to Japan's resource security and the stable supply of resources; build an international human resource network.

**【Facilities and Equipment】**

Oil, natural gas, and geothermal well drilling simulator for education and research (scheduled to start operation in 2022)

**● Research Center for Regional Disaster Prevention and Mitigation**

**【Purpose of Establishment】**

The facility acts as a base for education, research, and promotion of projects related to regional disaster prevention and mitigation, and works with local governments and private organizations, thereby contributing to the strengthening of disaster prevention capabilities in the region.

**● Advanced Research Center for Geriatric Medicine**

**【Purpose of Establishment】**

Aim to promote interdisciplinary research on our aging society and advanced research on geriatric medicine by strengthening the system of medical care for the elderly, based on our knowledge of dementia and regional sociological studies, and thereby contribute to the improvement of regional medical care and the development of research on longevity and health.

**● Joint Research Center for Electric Architecture**

**【Purpose of Establishment】**

To contribute to the sustainable development of the area and the realization of a vibrant regional society through promoting the research and development of electrified systems, including aircraft, based on industry-academia-government collaboration and through fostering industrial human resources to inspire companies, universities and students with entrepreneurial spirit, giving young people the opportunity to pursue their dreams by developing the creative industries of the future and enabling highly skilled human resources to play an active role to this effect.

**● Suicide Prevention Research Center**

**【Purpose of Establishment】**

The Center acts as a base for education, research and promotion of projects related to suicide prevention, and aims to contribute to helping to prevent suicide in the region in cooperation with local government and private organizations.

**● Center for Integrated Control, Epidemiology and Molecular Pathophysiology of Infectious Diseases**

**【Purpose of Establishment】**

The purpose of the Center is to organize and promote the integrated preventive, diagnostic and therapeutic strategies for infectious diseases, and promote the clinical, epidemiological and basic molecular research on infection diseases and host reaction. The Center is characterized by highly integrated clinical and basic research on infectious diseases. We also aim to disseminate the significant results of our clinical and research activities globally, and to train and educate medical personnel and researchers in the field of infectious diseases and infection epidemiology.



## ● Bioscience Education and Research Support Center

### [Facilities and Equipment]

- Animal Research Laboratory: [Animal breeding equipment] For mice, rats, guinea pigs, rabbits, pigs, etc. [Special experiment equipment] Laboratory for infected animals, chemical hazard. [Analysis devices] 3D micro X-ray CT equipment Ultrasound echo imaging, in vivo luminescence imaging, fluorescence imaging, X-ray television systems, etc. [Research support work] Reproductive engineering support (cryopreservation, re-establishment of mouse strains), creation of genetically engineered animals, guidance on animal experiment techniques.
- Radioisotope Research Laboratory: [Equipment] Survey meter, liquid scintillation counter, image analysis scanner, etc. [Authorized nuclides] 15 types, including <sup>3</sup>H, <sup>14</sup>C, <sup>32</sup>P and <sup>125</sup>I. [Research support] Departmental staff available to carry out RI-related duties (Negotiable).
- Molecular Medicine Laboratory: [Equipment] Super-resolution confocal laser scanning microscope, transmission electron microscope, flow cytometer, next-generation sequencer, liquid chromatography-mass spectrometer, all-in-one fluorescence microscope, centrifuges, spectrophotometers, cell culture incubation room, biohazard room, cryostat, laser microdissection, liquid nitrogen, ultra-low-temperature freezer, large format printer, etc. [Research support] Tissue sample preparation, gene analysis, electron microscope sample preparation, sterilization.
- Department of Education and Research Liaison



## ● Radioisotope Research Center

### [Facilities and Equipment]

- Unsealed source experiment area: -10°C and 4°C experiment laboratories: 3 fume hoods and 1 biosafety cabinet, liquid scintillation counter, tritium gas measuring and experiment equipment, various scalars, survey meters and plate analyzers
- Sealed source experiment area: Multi-channel ray spectrometer, high-performance liquid chromatograph mass spectroscopy, image analyzer, horizontal x-ray diffractometer

16 types of unsealed sources and 5 types of sealed sources are available for use.



## ● Environmental Research Center

### [Facilities and Equipment]

- Waste Treatment Building: inorganic waste – ferritization processing, organic waste/ hazardous solid waste – spray combustion/ incineration, mercury, cyanide waste – oxidative decomposition and adsorption processing, fluorine-phosphoric acid-based waste – calcification processing, COD waste – Fenton treatment
- Experiment and Analysis Building: Gas chromatograph/ mass spectrometer, gas chromatograph, atomic absorption spectrophotometer, liquid chromatograph, X-ray analysis equipment, other necessary equipment



## ● Center for Regional Revitalization in Research and Education Building No. 1

### [Facilities and equipment]

Fume hood, Microwave reactor, ultra-high resolution field emission scanning electron microscope, CHNSO elemental analyzer, flame/furnace atomic absorption spectrometer, CHO/CHS elemental analyzer, nuclear magnetic resonance spectrometer (600 MHz), X-ray photoelectron spectrometer, micro-focus X-ray computed tomography system, mercury porosimeter, ultra-high-performance liquid chromatography, light scattering gel permeation chromatography with light scattering detector, terahertz spectrometer, specific surface area/pore size distribution measurement system, catalyst analyzer, thermal cycler for real-time PCR, multi-label plate reader, modular electrochemical analyzer, rotational viscometer, bio-clean bench, confocal laser scanning microscopy.

## ● Center for Regional Revitalization in Research and Education

### [Purpose of Establishment]

As a university which serves as a base for learning in the pursuit of regional development, we contribute to the promotion and revitalization of local businesses and the development of human resources which serve the community, through collaborative research and support initiatives which promote the local economy.

## ● Center for Regional Revitalization in Research and Education Building No. 2

### [Facilities and Equipment]

- Innovative recycling technology and evaluation systems: Vibration mill, roll-type magnetic separator, nonferrous metal separator (eddy current separator), air table separator, ICP optical emission spectroscopy, ion chromatography, X-ray fluorescence, nanoparticle analyzer, Thermogravimetry-differential thermal analysis, metal dispersion analyzer, scanning probe microscope, shape measuring microscope, vacuum arc melting furnace, etc.
- High-function material fabricating and measurement systems: Field emission scanning electron microscope, Alloy film fabrication system, Ion Coater (Au,C), High vacuum scanning probe microscope, High sensitivity magnetization measurement system, High vacuum heat treatment system, X-ray diffractometer for thin films, X-ray diffractometer for powder, Magnetic storage material analysis and evaluation system, Nanoparticle size analysis / zeta potential measurement system, Liquid nitrogen production equipment, surface roughness measurement system, etc.

# Centers for Education and Research

	Purpose of Establishment
<b>Institutional Research and Evaluation Center</b>	<ul style="list-style-type: none"> <li>● To support self-evaluation, assessment activities, and efforts to improve the management at Akita University.</li> <li>● To research and develop student/faculty evaluation systems</li> <li>● Utilization and analysis of information inside and outside the university</li> </ul>
<b>Global Center for Higher Education</b>	<ul style="list-style-type: none"> <li>● To promote the structure and educational activities of an education system centered on a fundamental core curriculum education</li> <li>● To improve and enhance fundamental core curriculum education and specialized education through investigation, research, and development</li> <li>● Planning and public relations activities related to international exchange</li> <li>● To promote international academic exchange</li> <li>● To promote international educational exchange</li> </ul>
<b>Student Support Center</b>	<ul style="list-style-type: none"> <li>● To provide support for students through various types of consultation, and financial aid through tuition waivers and scholarship recommendations</li> <li>● To provide support for extracurricular activities such as the university festival, and to promote the maintenance and improvement of extracurricular activity facilities</li> <li>● Employment guidance, provision of employment information, support in searching for a career, such as employment consultations</li> </ul>
<b>Secondary Education Collaboration Center</b>	<ul style="list-style-type: none"> <li>● Connection between high school and university studies</li> <li>● Research and development of selection methods for university admissions based on admissions policies</li> <li>● Planning and drafting PR material for aspiring university applicants</li> </ul>
<b>Educational Profession Career Center</b>	<ul style="list-style-type: none"> <li>● Management and administration of teaching programs at Akita University</li> <li>● Training support for school teachers</li> </ul>

# Technological Organization

	Purpose of Establishment
<b>General Technical Section</b>	<ul style="list-style-type: none"> <li>● To provide campus-wide technological support for educational research activities</li> <li>● To maintain and develop the expertise of the engineering faculty as a common asset of the university, and to improve those capabilities and qualities and to ensure excellent tech support.</li> </ul>