

# Regional revitalization/Industry-academia collaboration

In 2004 Akita University became an Incorporated National University. It embraced this opportunity to reaffirm that education, research, and social contributions were the focal points of university management policy. We have been promoting the “open university project” as the hub of public intellect. The root of the university’s social contributions is the belief that one’s education not only takes place as a student, but that it is a lifelong process. Therefore the university should make proactive efforts to provide educational resources to the whole community. This concept acts as the basis for the expansion of various educational activities. Furthermore, we offer programs for high school students and their parents and guardians, as well as for elementary and junior high school students.

We launched the Center for Regional Revitalization in Research and Education in April 2016, making our university a base for regional learning

and regeneration. The Center contributes to the promotion and revitalization of local businesses and to the development of talent which serves the community and research to support the growth of local industry. In April 2022, the Research Center for Potential Development of Disaster Prevention of the Graduate School of Engineering Science and the Regional Disaster Prevention Department of the Center for Regional Revitalization in Research and Education were integrated and reorganized to study countermeasures, including responses to both natural and complex disasters, which have become more frequent in recent years. We established the Research Center for Regional Disaster Prevention and Mitigation as a university-wide organization with medical fields added to its existing specialty areas, and launched activities related to surveys, research, analysis, and support for regional disaster prevention and mitigation initiatives.

## Regional Cooperation; Social Contribution initiatives

### ■Open lectures

Every year open lectures are held on a wide variety of topics. These open lectures act as an excellent educational resource for anyone in the community at large who wishes to engage in lifelong learning.



### ■ Classes on the prevention of sports-related injuries and disabilities for young athletes

These classes use methods such as ultrasonic medical checkups to raise awareness of issues that can give rise to injuries and disabilities when playing sports, and to show how important it is for us to look after our bodies.



The class is aimed at anyone who is involved in sports in the prefecture, such as scout groups or parents and guardians. Using methods such as ultrasound scans, checks are made on players’ bones and muscles, the flexibility of their arms, legs and core, and their technique. Based on this, advice and guidance is given on stretching exercises and on throwing and pitching style and technique.

### ■“Medical Science Café”

As part of our university-wide social contribution initiatives, we make the University’s knowledge and learning available to local residents in an easy to understand format by inviting lecturers from our different departments to come to give informal lectures that are a product of interdepartmental collaboration. For example, the Head of the Graduate School of Medicine has become a “Science Café Master”, giving talks on medicine and health-related topics from a variety of perspectives.

### ■Elementary and Junior High School Student Tours

We offer university tours as an opportunity for people to get to know and develop their interest in Akita University.



## Regional disaster prevention

### 1. Surveys and research on regional disaster prevention

The Center has three divisions: the Disaster Mechanism Division, the Disaster Resilience Division, and the Human Support Division. These divisions conduct surveys, research and analysis, and support activities related to regional disaster prevention and mitigation.

### 2. Education to implement disaster prevention initiatives in the community

Disaster prevention education is provided for local government, neighborhood associations and educational institutions so that local residents can conduct disaster mitigation activities on their own in the event of an earthquake or other emergency.



### 3. Guidance and advice on disaster prevention measures to prefectures and municipalities

We offer guidance and advice on disaster prevention and mitigation for municipalities in Akita Prefecture, taking local characteristics into account, to facilitate earthquake damage forecasting and disaster prevention measures in Akita Prefecture.

## Regional Business Research

### ■ Resource Development, Recycling and Environment Research Project

We are developing an integrated research and educational program to promote international collaboration towards the sustainable utilization of natural resources such as petroleum, gas, minerals, and secondary resources.

Through this program, we intend to provide students with comprehensive knowledge of the sustainable utilization of resources, purification and recycling of waste materials and protection of the environment.



### ■ New materials; functional materials research and development projects

We undertake research related to discovering new and advanced materials, based on the results of our core research at Akita University. Realizing our capability as one of the leading research institutes in this area, we aim to develop new businesses and new jobs through collaborative works with universities, companies, and public institutions in Akita.



## Development of new molding technology for carbon fiber composite materials (CFRP: Carbon Fiber Reinforced Plastics) and manufacturing methods for lightweight components for the transportation equipment industry

(Project Leader: Professor Mikio Muraoka, Graduate School of Engineering Science)

Following approval from the Ministry of Economy, Trade and Industry, we established the Akita New Composite Technology Research Association in April 2017 as a regional development project for the prefecture. We established an R&D facility at the Center for Regional Development and conduct R&D activities based on industry-academia-government collaboration under the leadership of Mikio Muraoka, Director and project leader.

Through joint research with Mitsubishi Heavy Industries, we have developed a low-cost molding technology for carbon fiber composite materials based on magnetic field heating that can be used for aircraft fuselage structures. Against the backdrop of the move to EVs, we are collaborating with Toyota Motor Corporation and Shima Seiki, a world-class knitting machine manufacturer, on the practical application of CFRP construction methods to automobile interior parts using base materials woven with carbon fiber fabric. We are also developing a new method of repairing concrete structures using carbon fiber sheets and thermoplastic resin and are applying this technology to the civil engineering sector for the purpose of repairing public infrastructure.

### ■ Research and development of compact and lightweight electrification systems for mobility

To promote research on electrification of mobility (aircraft, automobiles, and other transportation equipment), a key technology for achieving carbon neutrality by 2050, we are collaborating with a project funded by the Cabinet Office's "2019 Grant for Regional Universities and Regional Industry Revitalization" to contribute to the promotion regional industrial development with the 'Creating Industry through Research and Development of Compact and Lightweight Electrification Systems' project.

### ■ New energy research and development project

Akita Prefecture has abundant natural energy resources. The coastal areas of Akita Prefecture are particularly suitable for wind power generation, and large-scale offshore wind farms are being installed here. This project will develop technologies that can contribute to the development of the local area through effective utilization of the abundant resources of renewable energy generated here.

### ■ Medical science and engineering collaborative industry research and development project

In the medical and welfare fields related to the aging population, we develop and promote new equipment and devices with companies mainly based in Akita Prefecture. We are committed to the development of the medical device industry through industry-academia-government partnerships, and have expanded our remit to include the development of equipment for general users to promote healthy living and longevity, as well as medical equipment.



Success with aircraft-standard CFRP molding in a small facility



Test concrete repair using the thermal spray method