AKITA UNIVERSITY

Faculty of International Resource Sciences

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Akita Kanto Festival

A festival held from August 3-6 every year in Akita City. The largest of the Kanto poles weigh approximately 50 kilograms, and men balance them on their hands, lower backs, and foreheads, pitting their skills against one another in competition. The university also has a team that participates.

Namahage Sedo Festival

This festival is held on the second Friday, Saturday, and Sunday in February every year. It is fascinating to watch the brave and powerful Namahage.

Kamakura igloos

Caves made from snow are called Kamakura. An altar is built within the Kamakura enshrining the god of water as an event of the Lunar New Year.

Lake Tazawa

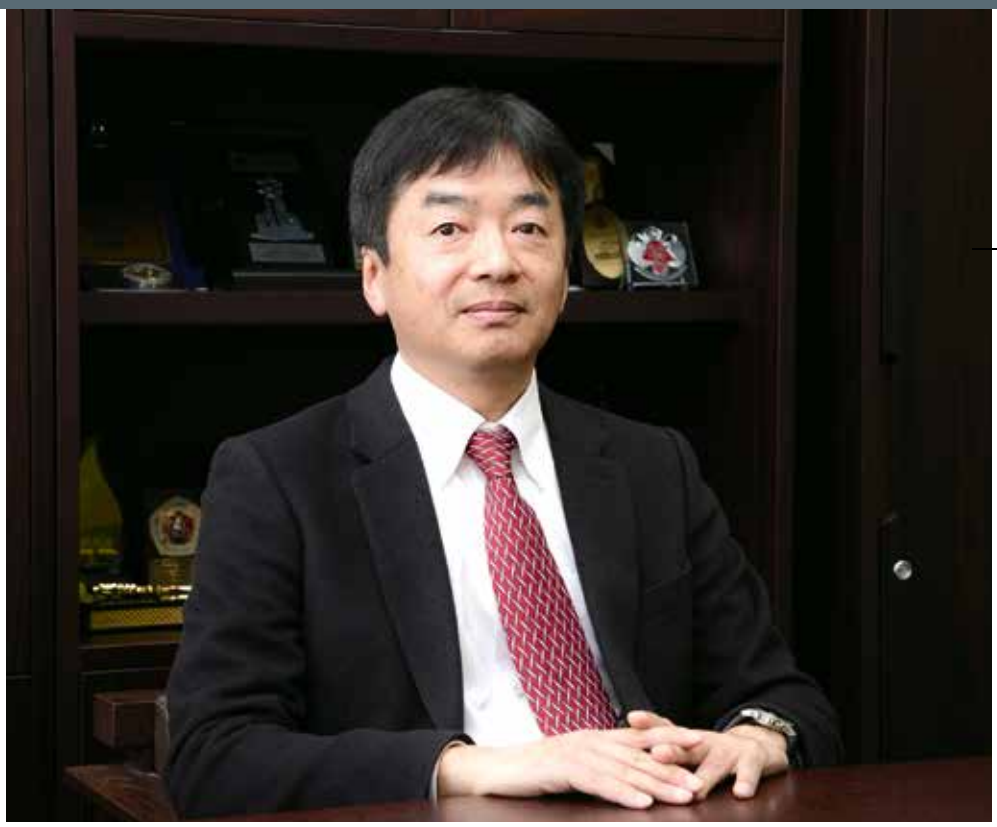
Japan's deepest lake is, located in Semboku City. One can enjoy its views as they change with the four seasons as well as swimming, canoeing, and rafting.

Onsen

Akita has many onsen (hot springs). Among them are the world famous Tamagawa Onsen and Nyuto Onsen.

Kiritanpo Hotpot

Akita's representative local cuisine. It is a hotpot dish consisting of rice that has been pounded and grilled, chicken, vegetables, mushrooms, and other ingredients.



From Curiosity About the Earth's Dynamics to a Global Career

Akita University's tradition of education and research in resource sciences dates back to March 1910, when the Akita Mining College was established to train engineers in the exploration of underground resources. Over the subsequent 100 years, Akita University has played a leading role in Japan's resource industry, producing many top engineers and researchers in the fields of metal, non-metal, and petroleum resources.

The Faculty of International Resource Sciences was established in 2014 to provide a stronger international platform for research and education. It functions as a national center for resource sciences, fostering global specialists to work at the forefront of this field. The basic education program incorporates general education courses, as well as a suite of special classes that are designed to equip students with a professional working proficiency in the English language. The specialized courses, offered from the beginning of the second year, are all taught in English by world-class professors who are keen on sharing their knowledge and cutting-edge research with students. The curriculum includes many distinctive features to foster high levels of specialization, such as the Resource Sciences Fieldwork Abroad program, in which students gain hands-on experience in the best practices in resource exploration and development outside Japan.

Akita is an ideal area for research in the resource sciences, with its abundance of oil fields and metal mines. We look forward to welcoming students to Akita who are curious about learning more about our planet.

Hikari Fujii

Dean of Faculty of International Resource Sciences

BS from the University of Tokyo, MS from Stanford University both in Petroleum Engineering.
Recent research interests are on ground source heat pumps and the development of water-dissolved natural gas resources.

5 Key Features

01 Leading team of resource science experts

Building on advanced expertise and on an extensive network of domestic and international contacts, Akita University is an institution that provides students with a comprehensive, structured curriculum in resource sciences, covering everything from the mechanisms of resource generation through to exploration, development, and production.

02 Interdisciplinary approach to resource science education

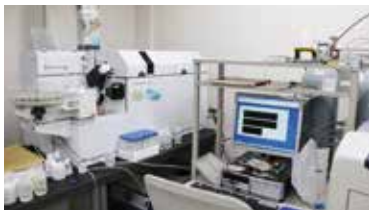
The Faculty of International Resource Sciences consists of three programs that together range across social sciences/humanities and earth sciences/engineering fields. These fields are closely interconnected in an interdisciplinary curriculum that encourages study beyond any single specialization. In this way we cultivate, for example, experts in resource geoscience who are well-versed in mineral economics, and resource policy specialists who possess an understanding of geology and engineering.

03 Specialized education in English

The Faculty of International Resource Sciences offers a cosmopolitan academic environment in which English is used on a daily basis for interaction with faculty and students from many countries, and for the presentation of research findings in international forums. First and second year students improve their fundamental English proficiency through a special program in Intensive English for Academic Purposes (I-EAP), before beginning to take specialized courses taught entirely in English from the second year.

04 Mandatory resource science fieldwork overseas

With the aim of fostering the practical ability to address a range of challenges encountered at the front lines of resource development, we require all students to complete Resource Sciences Fieldwork Abroad, a four-week practical program. In combination with International Resource Sciences Creative Seminar courses taken before departing and after returning to Akita, this program prepares students for an independent graduation research project that they undertake in the final year.



05 Cutting-edge research in resource sciences

The Faculty of International Resource Sciences boasts top-of-the-line research facilities and equipment, which are freely available for the use of undergraduate students under the supervision of their instructors. Our faculty members pursue ground-breaking research with international partners. Students benefit from access to these new research insights as they are acquired.

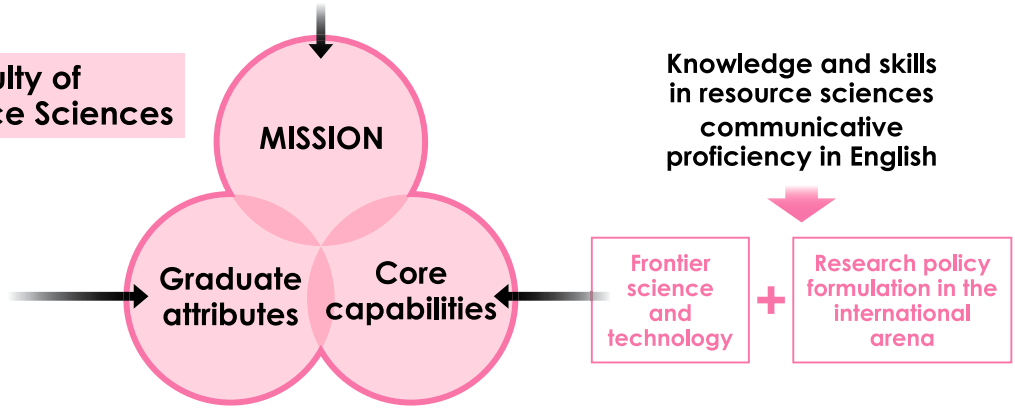
Field of Study

World-class education for global leaders
in the field of resource science is provided

Goals are:
To produce globally-minded individuals with a systematic knowledge of resources, from those resources' generation through to their exploration and development

To cultivate employment-ready resource specialists to take important roles in world-wide resource strategy in all sections of global corporations and international organizations

Overview of the Faculty of International Resource Sciences



Department of Resource Policy and Management

The rise of resource nationalism, as seen in the cases of oil and rare metals, has consequences that now extend not only to the management of natural resources themselves, but to larger geopolitical affairs. In order to navigate the complexities of international resource management, we must aim for sustainable and responsible resource development with not only scientific technologies, but also an understanding of resource trends, systems, and cultures from a global viewpoint.

In the Resource Policy and Management Course, students acquire deep insights into law, politics, economics, and international cooperation as they relate to natural resources. These essential insights are further refined by incorporating contextual information, like culture, politics, and religion when considering resource locations. The course consists of a unique curriculum, not only in Japan but worldwide, designed to train the future professionals that will solve energy- and mineral-related resource problems from sociological and humanitarian angles. After establishing a solid foundational knowledgebase in resources and English, students build upon their understanding using perspectives developed in the social sciences and the humanities. This interdisciplinary approach, which also includes the study of specialty subjects relating to the "hard sciences" in Earth Science and Engineering courses, provides students with the elements necessary to work internationally as resource-oriented professionals. By studying resources through interdisciplinary points of view, students will be able to better understand complex world affairs surrounding resource policy and management, and gain the skills necessary to handle problems with corporate and political responsibility.

Ritsuko Miyamoto
(Chair, Dept. of Resource Policy and Management)

Course work explores

Political Science and International Relations

The impacts that resources have on political democratization, economic modernization, and international relations are studied through the analysis of the current situation in resource rich countries.

Management

Legal regulations concerning resources such as international law, mining laws, and HSE, as well as joint venture agreement theory and negotiation are studied to understand how they relate to resource development.

Resource Environment Economics and Business Studies

The relationship between the development and environment of mineral resources and sustainable resource supply and global environment problems are studied by economic analysis and evaluation.

International Cooperation and Development

The impact of resources on the relationships between countries that provide development assistance and the countries that receive assistance as well as the ways in which local governments and autonomous authorities function in developing countries are studied.

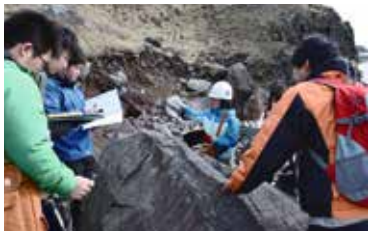
Social Anthropology and Area Studies

The problems and impacts of resource development on local residents in various countries is studied.

Intercultural Communication

Intercultural understanding and global communication are studied because of their importance in negotiations and dealings with resources rich countries.

Department of Earth Resource Sciences



Our daily lives are sustained by various kinds of natural resources such as metals, minerals, and hydrocarbons. Since the natural mineral and hydrocarbon resources exposed on the earth surface have been nearly exploited and mined out during the long history of mining, nowadays we need to explore and develop the resources deep in the ground and ocean floor to supply them to the society.

For the exploration of natural resources, it is indispensable to understand the complex geological history and phenomena that have happened, e·g., geneses and fractionation of magmas, crustal deformation, accumulation of sediments, and concentration processes of useful elements, compounds and minerals. Students in our department acquire a wide knowledge of earth science, including mineralogy, petrology, sedimentology, paleontology, structural geology as well as ore geology, and gain the basic knowledge of how natural resources occur in the earth.

The students also gain the skills such as microscopic observation and chemical analyses in the laboratory, as well as geological mapping through a month-long field survey in Akita prefecture. In addition, all students have an opportunity to visit abroad for a month and experience internship in mining companies, attend classes in other universities, and/or conduct geological field excursions in the countries they visit. They can graduate to become geologists/geoscientists through these activities, and after the completion of a graduation research project, they proceed to the next step as a geologist or an engineer in mining, engineering, material, trading, or public sectors, or as a graduate student . Why don't you join our department and aim to be a professional geologist/geoscientist who explores natural resources in the world?

Yasushi Watanabe
(Chair, Dept. of Earth Resource Science)

Course work explores

Stratigraphy and Pallontology

Using geological surveys and studies of microfossils and sedimentary facies, we recreate the ancient marine environmental changes from past to present, exploring the "where" and "why" oil resources and metal resources exist from the changes in organic matter production quantity and storage systems.

Metal Ore Deposits

We are interested in the natural processes that have concentrated metals to form mineral deposits throughout the Earth's history, from deep time to present. We study the formation of ores using field work and mine visits in Japan and overseas, microscopy observations and chemical analyses of rocks and minerals.

Mineral Resources and Tectonics

This field studies formation and concentration processes of useful minerals, evaluates new mineral resource potential, and proposes exploration and exploitation strategies of ore deposits, based on geology, mineralogy petrology and geochemistry. Tectonic and sedimentary processes related to mineralization are also studied.

Petrology

We study the origins and formative processes of various kinds of rocks based on field observation, microscopic works, and chemical analyses. The results of the petrologic studies are utilized for understanding the origins of mineral resources, as well as interpretation of the formation processes of the Earth crust and contributions to geothermal resource exploration and volcanic hazard mitigation.

Petroleum Geology

Surface and subsurface studies, of source rock, reservoir rock, and trap mechanisms of petroleum from the standpoint of sedimentology, geochemistry, or paleoenvironment, are widely conducted based on 3D seismic, well-log data, and borehole samples provided from industries with the use of a well equipped analyzing facilities.

Geophysical Exploration Studies

Using electrics, magnetics, gravity, seismic waves, electromagnetic waves and other geophysical phenomena studies are conducted to reveal the structures beneath the surface of the earth.

Department of Earth Resource Engineering and Environmental Sciences

From oil and natural gas to base/rare metals, there is a global competition to secure resources. In order to achieve a sustainable society, a stable supply of resources and technology that is efficient for production is essential. Recently there is a need for technologies for mining and mineral and metallurgical processing. Additionally, environmentally friendly production, new energy sources, recycling and resource circulation are important to the resource development and production technologies for the 21st century.

In this course, students can learn specialized fields related to resource development, environmental, recycling and their applications. Students undergo a variety of resource fieldwork abroad to acquire the knowledge and ability to play an active role in an international setting. Would you like to study the fields of energy resource development? This is your chance to learn technologies of the next-generation that are in harmony with earth's resources and become a leading engineer of resource development worldwide.

Atsushi Shibayama
(Chair, Dept.of Earth Resource Engineering and Environmental Science)

Course work explores

Resource Environment Substance Circulation Studies

Studies are conducted regarding the movement and concentration mechanisms of metallic elements and hazardous substances involved in resource development and water resource conservation.

Rock Engineering

Studies are conducted regarding environmentally sound resource development through rock surveys, stability analysis, and water jet drilling technologies, with a foundation in rock dynamics.

Mining Technologies

Studies are conducted to develop a new discipline which takes an interdisciplinary approach such as ICT (Information and Communication Technology), Soft-computing and Robotics into Mining and Disaster Control.

Energy Resources Engineering

Studies are conducted through experimentation and numerical calculation regarding efficient and environmentally friendly production methods of petroleum and geothermal resources.

Mineral and Resource Process Engineering

Studies are conducted regarding the development of isolation and concentration technologies that utilize the properties of mineral resources and rare metal and other resource recycling technologies.

Resource Recycling Process Engineering

Based on physical chemistry, studies are conducted regarding the efficient recovery of scarce resources from urban mines, and the basic principles of smelting rare resources at high temperatures.

Curriculum

Admission

1st year / 2nd year / 3rd year / 4th year

I-EAP (Intensive English for Academic Purposes)

International Resource Science Creative Seminars

Common Courses

- Introduction to Earth Resource Engineering and Environmental Science
- Introduction to Earth Science
- Introduction to Sociology of Local Community and Natural Resource Development etc
- Discussion Seminar
- Debate Seminar
- International Situation over Natural Resources

Dept. of Resource Policy and Management

General Education Courses

Freshman Seminar
Thematic Courses
International Language Courses
Sports and Culture Courses

Basic Education Courses

- History of International Diplomacy on Resources
- Cross-cultural Communication
- Resource Development and Human Rights
- Basic Mineral Economics
- International Cooperation of Japan
- Fundamentals of Mathematics
- Fundamentals of Physics
- Fundamentals of Chemistry
- Physics Laboratory Work
- Chemistry Laboratory Work

Practice of Resource Science

Specialized Courses

- Resources Policy
- International Law
- International Management
- Corporate Accounting
- International Development
- Cultural Anthropology
- Negotiation
- Petroleum Oil Resources
- Energy Geopolitics
- Resource Area Studies
- Energy and Mineral Resources - Status of Today and its Perspective
- International Affairs
- Development Economics
- Petroleum Law Mining Law
- Contractual Framework for Resource Development
- Mineral and Environmental Economics
- Advanced Studies on Resource Area
- Operation Risk Management
- Advanced Lecture on Resource Management
- Presentation skills for specialized topics

etc

Resource Sciences Fieldwork Abroad

- Project Management on Resource Development
- Research Proposal

Bachelor Thesis

Dept. of Earth Resource Science

Specialized Courses

- Historical Geology
- Geologic Mapping
- Petroleum Geology
- Laboratory for Paleontology
- Mineralogy
- Economic Geology
- Laboratory for Mineralogy
- Petrology
- Laboratory for Petrology
- Paleoenvironmental Analysis
- Sedimentology
- Structural Geology
- Experimental Study of Petroleum Deposits
- Laboratory for Historical Geology
- X-ray Crystallography
- Laboratory for Economic Geology
- Remote Sensing Geology
- Laboratory for Petrology, Mineralogy and Economic Geology
- Oral Communication for Academic Purposes

etc

- Applied Economic Geology
- Applied Mineralogy
- Research Proposal

Dept. of Earth Resource Engineering and Environmental Science

Specialized Courses

- Strength of Materials
- Fluid Mechanics
- Physical Chemistry
- Analytical Chemistry
- Geophysics
- Engineering Drawing
- Petroleum Engineering
- Geochemistry
- Mineral Processing
- Laboratory Work for Basic Engineering
- Geophysical Exploration
- Mineral Resources Exploration
- Computer Programming
- Geothermal Engineering
- Rock Mechanics
- Rock Engineering
- Surveying and Practice
- Recycling and Wastewater Treatment
- Refining Processing
- Advanced Material Engineering
- Oral Communication for Academic Purposes

etc

- Reading of Articles on Earth Resource Engineering and Environmental Science
- Research Proposal

Graduation

International Resource Sciences Creative Seminars

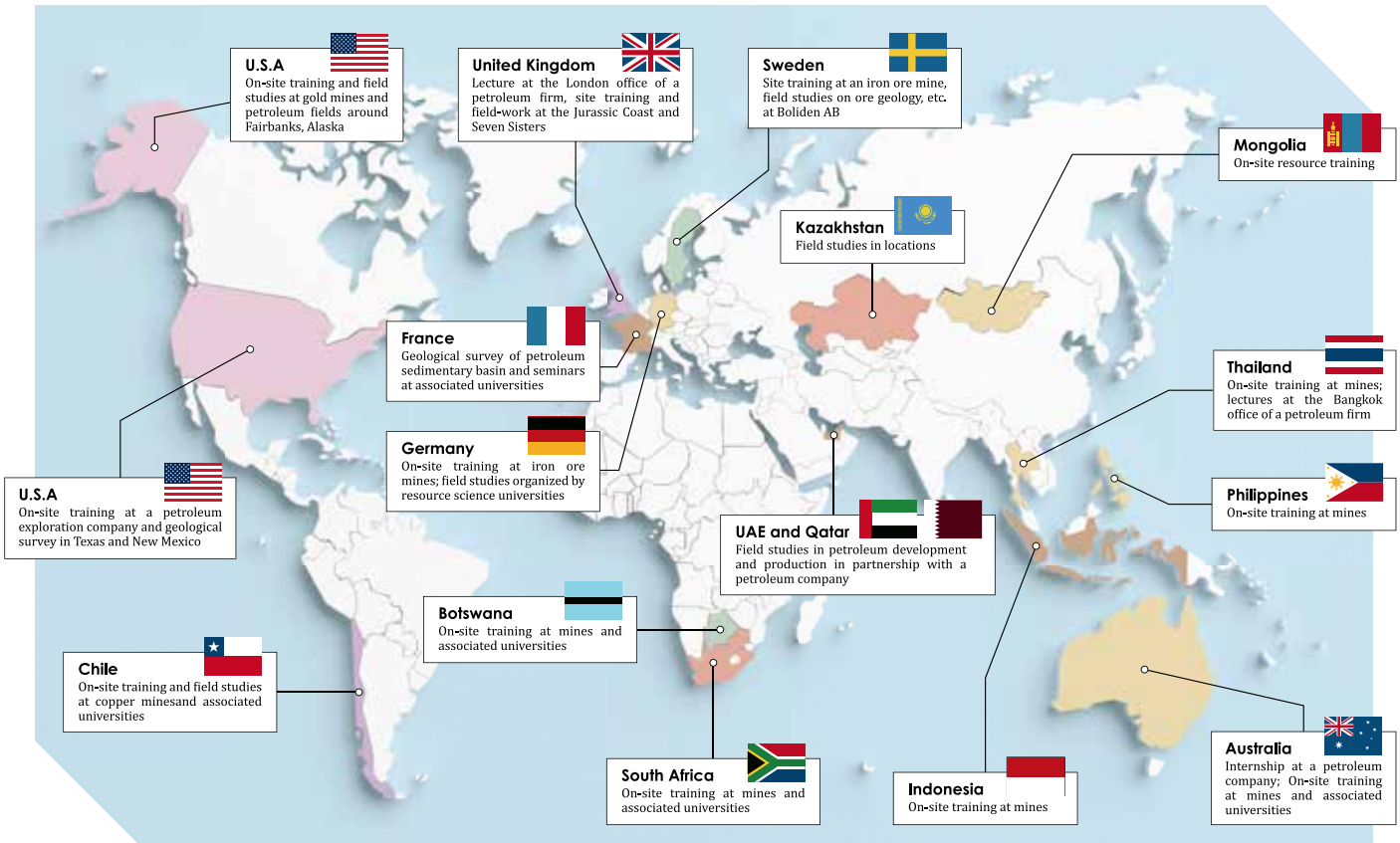
These seminars are designed to ensure that students get the maximum benefit from the mandatory Resource Science Fieldwork Abroad program: a 4-week practical program undertaken at an organization outside Japan, such as a mining/petroleum company, or international organization. Students participate in the seminars both before departure and after completing the program.

Pre-departure study ▶ **Fieldwork** ▶ **Post-fieldwork**

- Choosing a fieldwork area
- Approaching a host organization
- Orientations led by faculty members
- Individual pre-departure study
- Report writing
- Reporting and debriefing session

International Fieldwork

This hands-on training program is a requirement in the third year of the course; students will conduct surveys and study the latest, actual state of resources in a foreign country. Students will utilize the fundamental knowledge of their specialty field to learn about the various resource-related issues facing the world while in a dynamic field offering experiences that cannot be had in Japan.



【Costs required for fieldwork】
Akita University will cover the cost of return travel, visa applications, and overseas travel insurance. Students are responsible for their own costs including accommodation and ground transportation.

A message from previous international students

Nurul Fatini Binti Rosle
Department of Resource Earth Resource Science
From Malaysia (The second person from the left)

I chose Akita University because I have been interested in studying about resources and I found out that Akita might be one of the best choices that I have so here I am. I was offered a scholarship from my country's government and spent about 2 years in my country for preparation programme and then I came here to start my degree. The classes are provided in both English and Japanese, so sometimes we confused but when you get used to it, it will get better. We will get the chances to go for overseas fieldwork during our third year of study which I think might be the a great experience, we have to finish "shinkyu ronbun" which is like a thesis before entering the fourth year. It might get hard and challenging but with friend's and professor's support I think it will be okay. By taking this course, you can expand your knowledge in various fields not only mining but also volcanology, paleontology, and more. Of course it's not an easy route, but I think it is bearable and if you really interested in those things, it is a great chance. A as for the weather of Akita, is it one of the prefecture where you can enjoy the winter to the fullest. If you love snow, it will be a great choice. Lastly, do consider and check out the degree programme of our faculty. Thank you.

Nasantogtokh Khangerel
Department of Earth Resource Engineering and Environmental Science
From Mongolia

I came to Akita University as an undergraduate student majoring in earth resource engineering. I always wanted to learn about earth resource science and contribute to my own country. Coming from Mongolia, I was nervous about adjusting to a new environment but I was also excited about the opportunities available. The university advocates learning through activities. I remember as a freshman being encouraged to try different kinds of research through lab rotations. This helped me to figure out my major more precisely. Akita University is well known for its earth resource development education. There is an opportunity to get an education in both Japanese and English. Also, there is a program that can lead you abroad to experience real industry and mining activity. Therefore, I am sure that this department will give provide you a world-class education.

As an international student, there were some hard times when facing a different culture. However, I've have been supported by teachers, students, and department staff. So there is nothing to worry about.

University life is not just about the work we do in class, it is also about the friends and contributions we make in the community. As an international student, I appreciate Akita's friendly people.

There are many interesting activities, sports, and clubs. Let's enjoy Akita together.

Q&A

Q. What kind of place is Akita?

A. Akita is located on the Japan Sea side of northern Honshu. It is home to a world heritage site, Shirakami-Sanchi, Lake Tazawa, the deepest lake in Japan, and it is well-endowed with abundant nature symbolized by the Oga Peninsula and Mount Hachimantai. There are four distinct seasons with cherry blossoms in spring, one of the three major Tohoku festivals, the Kanto festival in summer, the foliage in autumn, and there are winter sports and festivals available that can only be enjoyed in Akita's winter.
Akita University's campus is located in Akita City, the capital of Akita Prefecture, Public transportation is convenient, and the cost of living is much lower than the Tokyo area making it the perfect environment for international students.

Q. How many international students attend the school?

A. There are 200 international students enrolled at Akita University. Among them, there are international students and non-degree seeking researchers from Mongolia, Malaysia, Vietnam, China, the Philippines, Malawi, Brazil, and more in the Faculty of International Resource Sciences.

Q. What level of Japanese is required?

A. In the Faculty of International Resource Sciences specialized subjects are all taught in English from the second year, however general and fundamental education subjects and the specialized subjects for first year students are all conducted in Japanese, therefore it is necessary to have a sufficient proficiency in Japanese.
At Akita University, classes are offered to international students to improve their Japanese proficiency, and there are classes available that offer a better understanding of Japanese society and culture.

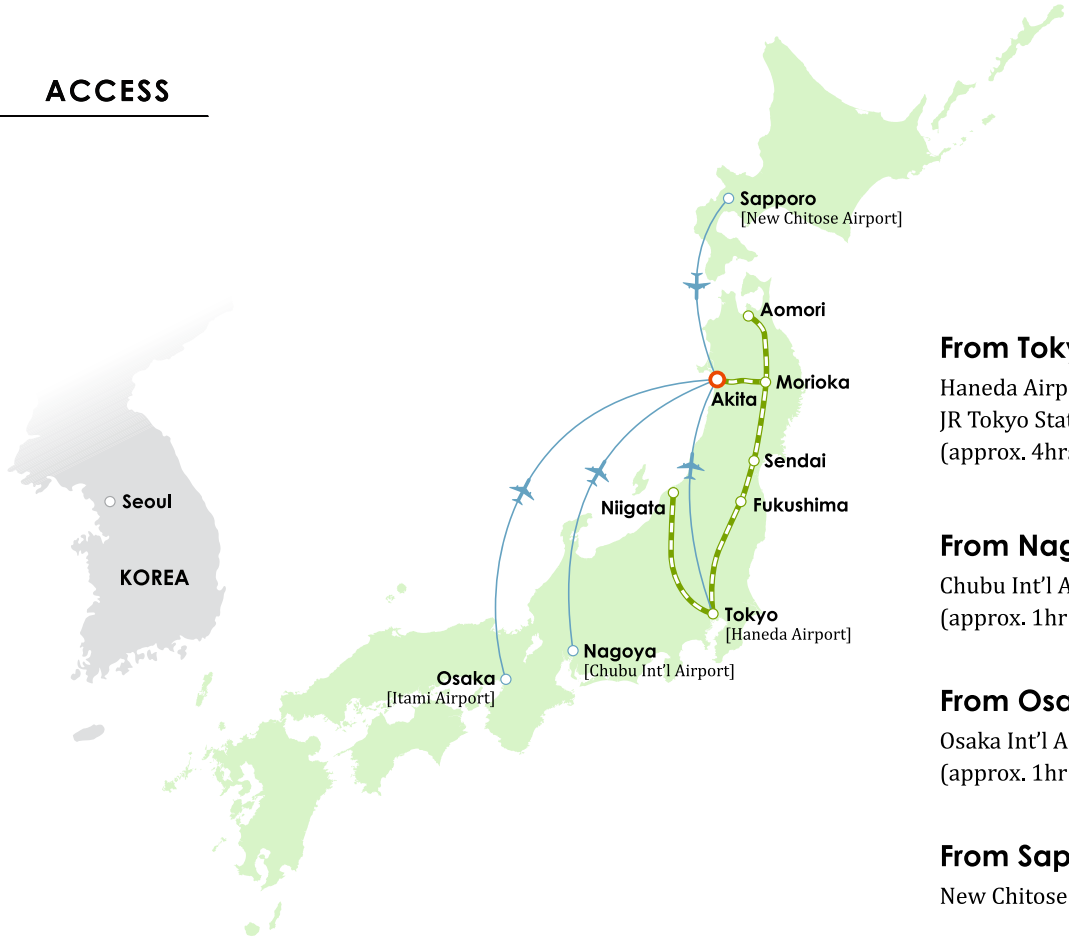
Q. Are there any scholarships or financial aid available for international students?

A. There are several forms of financial aid available to international students including scholarships from the Japanese government's MEXT scholarship program, foreign governments, and private organizations. At the university level there is a form of financial aid by tuition fee exemption. Students whose academic excellence is recognized, but have difficulty making payments for financial reasons, are eligible for exemption of a portion of their tuition fees.

Q. Can international students have part-time jobs?

A. Only international students in Japan on a "student" visa who have been granted permission to engage in activities other than that permitted under the status of residence previously granted from the Immigration Bureau may engage in part-time work.

ACCESS



From Tokyo

Haneda Airport - Akita Airport (approx. 1hr)
JR Tokyo Station - Akita Station
(approx. 4hrs by Komachi. Akita Shinkansen)

From Nagoya

Chubu Int'l Airport - Akita Airport
(approx. 1hr 25mins)

From Osaka

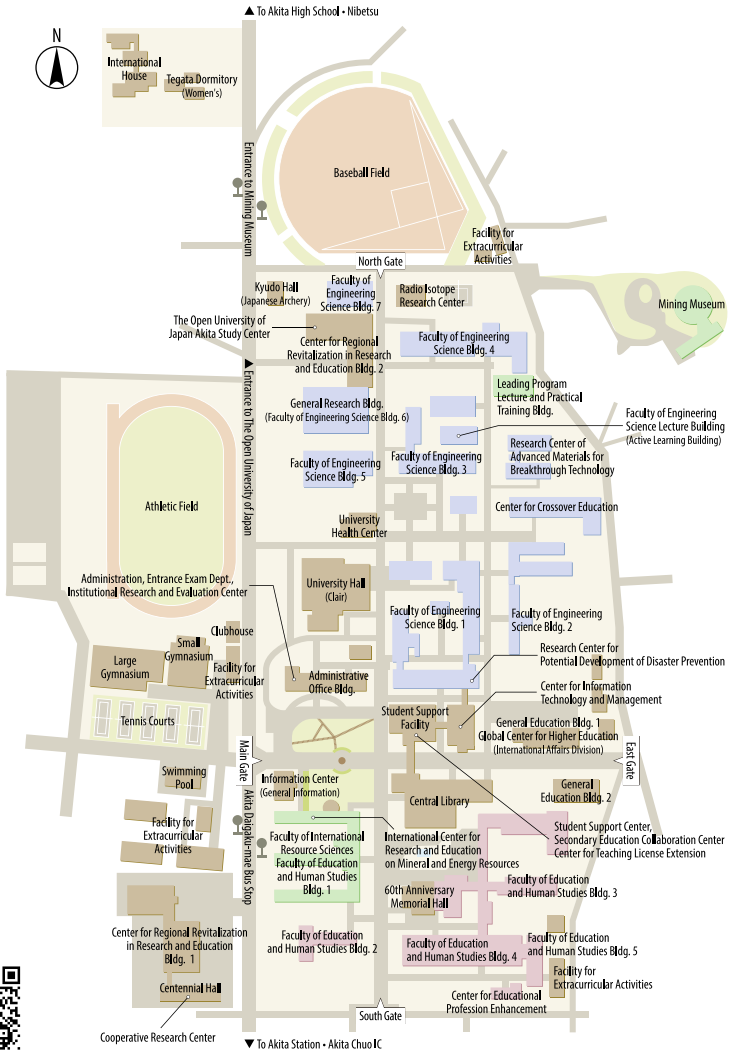
Osaka Int'l Airport (Itami) - Akita Airport
(approx. 1hr 30mins)

From Sapporo

New Chitose Airport - Akita Airport (approx. 1hr)

TEGATA CAMPUS MAP

Faculty of International Resource Sciences
Faculty of Education and Human Studies
Faculty of Engineering Science
University Common Use Facilities



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