

FACULTY OF INTERNATIONAL RESOURCE SCIENCES

AKITA UNIVERSITY

FEED YOUR CURIOSITY FOR THE EARTH.
GO OUT AND EXPLORE THE WORLD.



Message from the Dean

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

With its small reserves of underground resources, Japan heavily depends on imports to supply natural resources. Because of the surge in resource consumption among emerging countries in recent years, the competition for energy resources is becoming increasingly intense worldwide. Therefore, it is crucial to foster resource professionals with advanced knowledge and skills to ensure a stable supply of natural resources.

The history of the Faculty of International Resource Sciences stretches back to 1914 with the purpose of training engineers to work at the forefront of business and research sectors of resource development. Our curriculum is designed exclusively for this aim. We offer specialized courses all taught in English, the Resource Sciences Fieldwork Abroad Program, and daily communication opportunities with students from across the globe, equipping students with English language proficiency and global awareness. As a result, many of our graduates have been recruited by leading resource-related companies inside and outside Japan.

Knowledge of resource development is more important than ever to promote renewable energy, energy storage and carbon capture and storage, to achieve carbon neutrality with a view to combating global warming.

We look forward to welcoming students who are eager to contribute to the future as resource specialists.

FUJII Hikari

Dean of Faculty of International Resource Sciences

Graduated from the University of Tokyo with a Bachelor of Engineering in 1987 and completed his graduate studies at Stanford University in 1993. He has working experience as a petroleum engineer in offshore oilfields in Saudi Arabia and has been in his current position, Dean of Faculty of International Resource Sciences and Graduate School of International Resource Sciences, since 2019.

Five Key Features



01 Leading team of resource science experts

Building on advanced expertise and 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 departments 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 Compulsory 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 Creative Practice of International Resource Science 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.

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.



Department of Resource Policy and Management

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, history, geography, 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 and environmental issues from angles of the social sciences and the humanities. After establishing a solid foundational knowledgebase in resources in both Japanese and English, students build upon their understanding using perspectives developed in the interdisciplinary sciences, all taught in English, to work internationally as resource-focused and environment-oriented professionals. The curriculum includes the Resource Sciences Fieldwork Abroad program, a three to four week program, in which students gain hands-on experience in the best practices in resource exploration, development, and management outside Japan. A truly international department, in the last eight years, this course has accepted international students from Vietnam, Malaysia, Mongolia, and China, and has sent Japanese students to pursue their independent academic interests in Taiwan, the Philippines, Malaysia, Indonesia, Iran, Germany, Poland, Finland, New Zealand, Kenya, Botswana, and USA.

By studying natural resources, including materials, water, and land, through integrated 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 global issues with corporate responsibility.



NAWATA Hiroshi

(Chair, Dept. of Resource Policy and Management)



Course work explores

Political Science, International Relations and Public Policy

Study the factors of resource conflict and the ideal way of stable resource distribution and explore sustainable resource governance.

International Cooperation and Development Studies

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 are studied.

Law and Business Management

Legal regulations such as international law and mining laws, as well as joint venture agreement and human rights in investment laws are studied to understand how they relate to resource development and business management.

Sustainable Resource Management and Area Studies

Sustainable Resource Management is studied to support community development and to ensure the long-term material basis of societies in a way that human well-being will increase at the same time as rates of resource use and environmental degradation slow down.

Mineral, Energy and Environment Studies

We focus on the issues of global warming caused by the expansion of energy and mineral resource usage, and explore economically and socially acceptable measures to reduce CO₂ emissions.

Intercultural Communication and Cultural Anthropology

Intercultural understanding and global communication are studied in accordance with their importance in international negotiations and multi-stakeholder engagement in resource development and management.

Highlights

At the Mineral Industry Museum, we held a special exhibition titled “Arabian Costumes from the Perspective of Silver and Gold – Colorful, Revival, Recycled” .

For more details ▶



Department of Earth Resource Science



Earth science is the study of various Earth activities such as fossil and mineral formation, volcanic eruptions, seismic activity, tsunamis, tectonic movements, oceanic environmental changes, climate change and the geomagnetic field. These geologic activities are closely linked to important energy resources as well as metal and non-metal resources. The Department of Earth Resource Science provides a detailed understanding of such Earth activities and covers how resources are formed, their distribution and exploration methods. Students start studying a wide range of subjects including humanities and engineering fields soon after enrollment, and develop practical English language skills through the Intensive-English for Academic Purposes program. From the second year onwards, specialized subjects such as earth science are taught in English, while in the third year, students will gain valuable skills through practical training including geological site investigations and the Resource Sciences Fieldwork Abroad Program. Our solid curriculum will help students to develop English language skills while gaining knowledge of earth sciences and resources to grow as world-class professionals in those fields by the time they graduate. Many of our graduates are working on the global stage, applying the knowledge and skills they gained during their studies. Why don't you join our department and aim to become a world-class earth resource science specialist?

OHBA Tsukasa

(Chair, Dept. of Earth Resource Science)



Course work explores

Stratigraphy and Paleontology

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.

Economic Geology

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.

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.

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.

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 well equipped analyzing facilities.

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.

Environmental Geoinformatics

Our methods integrate multiple techniques from a number of fields, such as stratigraphy, sedimentology, paleoceanography, paleoclimatology, geochronology, etc., to better understand the Earth's history. We combine field work and laboratory analyses with data science, which is strongly emphasized in order to clarify and understand the uncertainty in our measurements. This informs interpretation of our results and improves our confidence in conclusions.

Highlights

Check out our website for the latest information or details of the course and research.

http://www.gipc.akita-u.ac.jp/~earth-resource/index_eng.html



Department of Earth Resource Engineering and Environmental Science

To realize sustainable living for all people on planet earth, the Sustainable Development Goals (SDGs) were set at the 2015 UN Summit. They are 17 detailed goals with 169 targets, one of which is “Affordable and clean energy”. Japan’s “Mining Law” also states that developing mineral resources is to contribute to public welfare, never causing harm to health and hygiene. By SDGs, we reaffirm that resource and energy development must be “affordable and clean”. Based on this noble philosophy, we hope that students who study here in the Department of Earth Resource Engineering and Environmental Science will grow as engineers who can fulfill minimally invasive development and production of resources and energy, and distribute them justly around the world.



IMAI Tadao

(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.

Energy Resources Engineering

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

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.

Geosystem Engineering

Studies are conducted regarding oil, gas, geothermal, and other resource developments including offshore resources and CCS with focuses on drilling engineering and reservoir simulation.

Mineral Processing

Studies are conducted to efficiently recover target metals, including rare metals from both primary and secondary resources while utilizing mineral processing, recycling and extractive metallurgy techniques that are environmentally sustainable.

Metallurgical Process Engineering

Studies are conducted regarding the efficient recovery of metal resources, and the basic principles of pyro/hydro-metallurgy.

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.

Highlights

Our Resource Processing Engineering Laboratory is dedicated to researching separation, recovery and recycling techniques for mineral resources, including rare metals. These techniques are closely connected to resource circulation and the SDGs, and are fundamental to achieving carbon neutrality. In addition to our unique research themes, we collaborate with government agencies and private companies to advance research projects, with the aim of developing 21st-century resource production.



Admission

Admission			
1st year	I-EAP (Intensive English for Academic Purposes)	Common Courses	Dept. of Resource Policy and Management
		• Introduction to International Relations • Practice of Resource Science • Introduction to Resource Geology • Discussion Seminar	General Education Courses Freshman Seminar Thematic Courses International Language Courses Sports and Culture Courses
			Basic Education Courses • I-EAP Certificate • History of International Relations on Resources • Cross-cultural Communication • Resource Development and Human Rights • Micro Economics • Macro Economics • International Cooperation of Japan • Linear Algebra • Calculus • Fundamentals of Physics • Physics Laboratory Work • Fundamentals of Chemistry • Chemistry Laboratory Work etc.
2nd year	I-EAP (Intensive English for Academic Purposes)	Creative Practice of International Resource Science	Dept. of Earth Resource Science
			Practice of Resource Science Specialized Courses • Studies on Resource Policy • International Law • Energy and Environment • Policy Process • International Development • Cultural Anthropology • Negotiations • Energy Geopolitics • Studies on Resource Area • Current Trend on Resource Development • International Affairs Analysis • Resource and Peacebuilding • Mining Law • Contractual Framework for Resource Development • Mineral Economics • Energy Systems and Policy • Advanced Studies on Resource Area • Special Lecture on International Cooperation • Presentation Skills • Historical Geology • Material Cycles Studies • Recycle Process System Engineering etc.
			Specialized Courses • Historical Geology • Geologic Mapping • Petroleum Geology • Laboratory for Paleontology • Mineralogy • Economic Geology • Laboratory for Mineralogy • Petrology • Laboratory for Petrology • Geophysics • Paleoenvironmental Analysis • Sedimentology • Structural Geology • Laboratory for Petroleum Deposits • X-ray Crystallography • Laboratory for Stratigraphy • Laboratory for Economic Geology • Remote Sensing Geology • Laboratory for Petrology, Mineralogy and Economic Geology • Presentation Skills • Geophysical Exploration • International Law • Strength of Materials • Rock Mechanics etc.
			Specialized Courses • Strength of Materials • Fluid Mechanics • Physical Chemistry • Analytical Chemistry • Fundamental Drawing and Design in Engineering • Petroleum Engineering • Geochemistry • Petroleum Engineering • Environmental Remediation for Sustainable Engineering • Instrumental Analysis • Mineral Processing • Rock Mechanics • Foundation Laboratory Work for Engineering • Surveying and Practice • Materials Processing • Computer Programming • Geothermal Engineering • Rock Engineering • Recycling and Wastewater Treatment • Refining Process Engineering • Presentation Skills • Geophysics • Economic Geology • Geophysical Exploration • Mineral Economics etc.
3rd year	Creative Practice of International Resource Science	Creative Practice of International Resource Science	Dept. of Earth Resource Engineering and Environmental Science
			Resource Sciences Fieldwork Abroad • Senior Research Proposal etc.
			Bachelor Thesis • Applied Economic Geology • Applied Mineralogy • Research Proposal etc.
			• Literature Reading • Research Proposal etc.
4th year			

Graduation

TEACHING STAFF

 Dean Professor FUJII Hikari Dept. of Earth Resource Engineering and Environmental Science Petroleum Engineering, Geothermal Engineering	 Vice Dean Director of Mineral Industry Museum Professor WATANABE Yasushi Dept. of Earth Resource Science Economic geology, Tectonics
 Vice Dean Professor ADACHI Tsuyoshi Dept. of Earth Resource Engineering and Environmental Science Mineral Economics	 Director of ICREMER Professor SHIBAYAMA Atsushi Dept. of Earth Resource Engineering and Environmental Science Mineral Processing, Recycling, Extractive Metallurgy

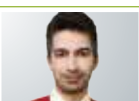
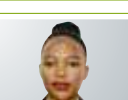
Department of Resource Policy and Management

 Chair Professor NAWATA Hiroshi Resource Management, Cultural Anthropology, Environmental Impact Assessment	 Professor MIYAMOTO Ritsuko Africa Area Studies, Linguistics, Intercultural Communication
 Professor MIYAKE Yoshimi Linguistic Anthropology, Linguistics, Southeast Asian Studies	 Professor INAGAKI Fumiaki International Politics, Political Sciences, Area Studies, Geopolitics
 Professor (Cross Appointment) KOSEKI Takehiro Geothermal Resource Science	 Professor HANSEN Paul Simon Socio-Cultural Anthropology, Animal-Human-Technology Relations
 Associate Professor ODA Junichiro Energy and the Environment, Energy Systems	 Associate Professor KAWAI Takayuki Hydrology and Water Resources
 Lecturer CACALI Evan Applied Linguistics, Second Language Acquisition, American Studies	 Project Assistant Professor TANAKA Maria IPE, Area Studies (China), China's Foreign Policy, China-Central Asia Relations
 Assistant Professor GOTO Manami Gulf Studies, Ethnography	

Department of Earth Resource Science

	Chair Professor OHBA Tsukasa Petrology, Volcanic Geology		Distinguished Professor SATO Tokiyuki Petroleum Geology, Paleoceanography
	Professor AGANGI Andrea Igneous Petrology, Economic Geology		Professor OBROCHTA Stephen Stratigraphy, Paleoceanography
	Professor CHIYONOBU Shun Petroleum Geology		Associate Professor YAMASAKI Makoto Micropaleontology, Paleoceanography
	Associate Professor ECHIGO Takuya Mineralogy, Crystallography		Associate Professor TAKAHASHI Ryohei Economic Geology
	Associate Professor NISHIKAWA Osamu Structural Geology		Assistant Professor HOSHIDE Takashi Petrology
	Assistant Professor SAKANAKA Shinya Exploration Geophysics, Geomagnetism		Assistant Professor MANALO Pearlyn Economic Geology, Resource Geology
	Assistant Professor MATSUI Hiroki Micropaleontology, Paleoceanography		Assistant Professor AOKI Shogo Geology, Geochemistry, Geochronology, Mineralogy
	Assistant Professor TUPAZ Carmela Alen Jayme Economic Geology, Geochemistry		Assistant Professor ANDO Takuto Organic Geochemistry, Biogeochemistry, Biogeochemistry

Department of Earth Resource Engineering and Environmental Science

	Chair Professor IMAI Tadao Rock Engineering		Project Professor ISHIYAMA Daizo Economic Geology, Geochemistry, Environmental Geology
	Professor NAGANAWA Shigemi Drilling Engineering, Petroleum Engineering, Geothermal Engineering		Associate Professor OGAWA Yasumasa Geochemistry, Environmental Chemistry
	Associate Professor KIZAKI Akihisa Rock Engineering		Associate Professor TAKASAKI Yasushi Extractive Metallurgy
	Associate Professor HAGA Kazutoshi Mineral processing, Extractive metallurgy		Associate Professor JEON Sanghee Mineral Processing, Hydrometallurgy, Recycling
	Associate Professor TORIYA Hisatoshi Remote Sensing, Machine Learning, Hyperspectral Imaging, Computer Vision		Project Lecturer BATNASAN Altansukh Mineral processing, Hydrometallurgy and Recycling
	Assistant Professor ABE Kazunori Petroleum Engineering, Material Engineering		Assistant Professor BINA Saeid Renewable Energy, Geothermal Energy, Building Energy, Ground Source Heat Pump
	Assistant Professor BJARKASON Elvar Geothermal Reservoir Engineering, Reservoir Simulation, Data Assimilation		Project Assistant Professor IKEDA Hajime Mining Engineering, Resource Development Engineering
	Assistant Professor GODIRILWE Labone Lorraine Mineral Processing, Extractive Metallurgy		

Graduate School of International Resource Sciences

The Graduate School of International Resource Sciences aims to solve global resource issues, pursuing cutting-edge studies and research backed by expertise in the fields of earth resource science and earth resource engineering and environmental science. We will foster global leaders with wide-ranging knowledge of earth science, resource development and environmental conservation.

Master's Program

With the aim of solving global resource issues, this program trains students to cultivate creative minds and a global perspective, so they can be at the forefront of future development and innovation of resources and energy strategies.

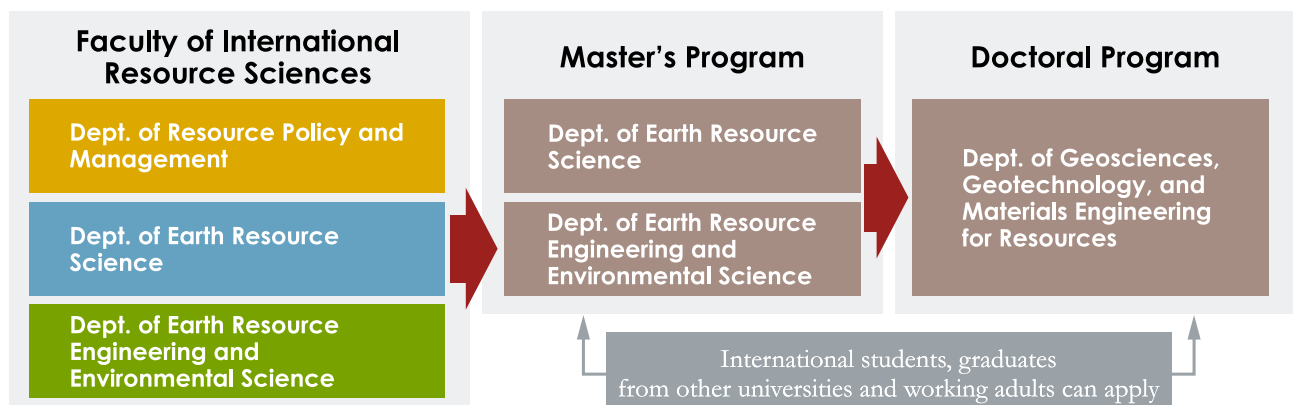
Doctoral Program

This program will foster professionals with a state-of-the-art research capability, who can adequately apply research results to resource areas and propose new guidelines for resource exploration and development.

Program/Division Descriptions

Master's Program	Department	Outlines	Objectives
	Earth Resource Science (Capacity:17)	This department conducts research with a focus on investigating generation and deposits of minor metals essential to develop new materials, as well as natural resources such as minerals and energy resources.	We will equip students with expertise in resource science and earth science, in order to meet society's needs in resource exploration and development.
	Earth Resource Engineering and Environmental Science (Capacity:23)	This department provides education in recycling technologies and earth and resource system engineering, aiming to fulfill a sustainable society as well as environmentally-friendly resource development.	This program will foster world-class resource engineers with expertise in earth resource and environmental science. Students will be taught how to implement the next-generation resource development with a holistic view. Specialty areas include: • Resource environmental science • Development and production of various natural resources including petroleum, natural gas, minerals and geothermal energy • State-of-the-art technologies and theory of environmental conservation, specifically in the fields of recycling and smelting process and wastewater treatment
Doctoral Program	Department	Outlines	Objectives
	Department of Geosciences, Geotechnology, and Materials Engineering for Resources (Capacity:10)	This department conducts resource science research in the areas of: • Resource exploration and development compatible with conditions of resource generation and deposits • Technology to solve environmental problems arising from resource exploitation • Resource economics • Resource recycling technologies	We will equip students with a sophisticated research capability and a high degree of expertise, enabling them to adequately apply research results to resource areas and propose new guidelines for resource exploration and development.

Process Flowchart



Project for Education and Research

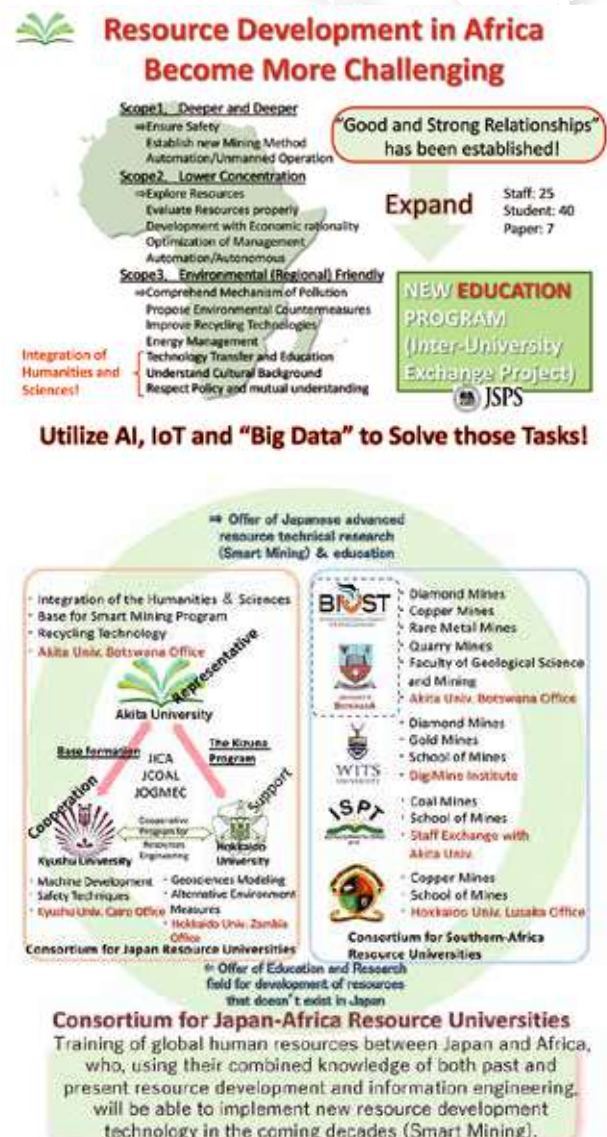
MEXT INTER-UNIVERSITY EXCHANGE PROJECT

“An innovative program for development of core human resources for smart mining to lead sustainable resource development in Southern Africa”

(Project duration : 2020 to 2024)

In collaboration with Kyushu University (Cooperating University) and Hokkaido University (Supporting University), we are implementing a collaborative program for human resource development at the undergraduate and master's levels in Japan and Southern African countries, aiming to develop future global leaders who can practice resource development (Smart Mining) by actively incorporating information technology, which is a core technology of Society 5.0. We will practice the program. In consideration of the global spread of the new coronavirus, the program has been designed to make active use of online resources.

Collaborating universities in South Africa: University of the Witwatersrand (Republic of South Africa), The University of Zambia (Republic of Zambia), The Polytechnic Institute of Tete (Republic of Mozambique), Botswana International University of Sciences and Technology (Republic of Botswana), University of Botswana (Republic of Botswana)



MEXT University Fellowship Founding Project

Project Title: “Cultivation of Advanced Resource Sciences-related Doctoral Students with the Integration of the Humanities and Sciences to Contribute to Achieving SDGs” (Project duration: FY2020 to FY2027)

The objective of this project is to secure excellent candidates who apply to study for the doctoral program in contributing to science, technology, and innovation in the future, and implement improvements in their treatment and support for students' career paths in the doctoral program.

1. Advancement of research and assistance to career paths:

- 1) Increasing interaction between Doctoral students by utilizing a lounge for the exchange of information and compiling a database of research activities.
- 2) Holding research workshops for improving their ability to research
- 3) Implementing internships through cooperative research with enterprises

2. Securing career paths:

- 1) Mentorship and implementation of securing career paths through a specially appointed professor
- 2) Matching the eligible students' research activities to needs of enterprises by compiling a database
3. Assistance grant funding and research expenses

Payment of 150,000 yen per month for assistance grant funding (worth ones' living costs) and 300,000 yen per year for research expenses

Project for Education and Research

JSPS Core to Core Program

“Establishment of Research and Education Hub to Develop Young Researchers on Mining Informatics for Sustainable Resource Development in Middle Asian Countries” (Project duration: 2021 to 2023)

JSPS adopted the University’s project, “Establishment of Research and Education Hub to Develop Young Researchers on Mining Informatics for Sustainable Resource Development in Middle Asian Countries” as a Core to Core Program (B. Asia-Africa Science Platforms). The purpose of this project is to cultivate young resource information researchers through building educational and research foundations and promoting mutual exchanges with representative universities in five Central Asian countries that have high underground resource (especially mineral resources) potential as resource frontier areas, but lack workforce with advanced technological and planning capabilities for resource development. Specifically, Japan and overseas hubs will conduct joint research and hold seminars, symposiums, researcher exchanges and other activities. Japan-based institution: Akita University. Partner institutions in Japan: Hokkaido University, Kyushu University, and University of Tsukuba. Overseas institutions and partner organizations: Mongolian University of Science and Technology (Mongolia), Nazarbayev University (Kazakhstan), Navoi State Mining Institute, Uzbek-Japan Innovation Center of Youth (UJICY) (Republic of Uzbekistan), National Academy of Sciences of Tajikistan (including Mining-metallurgical Institute of Tajikistan) (Republic of Tajikistan) and Kyrgyz State University of Geology, Mining and Natural Resources Development, named after Academician U. Asanaliev (Kyrgyz Republic).

JICA/JST Science and Technology Research Partnership for Sustainable Development

"Construction of a Decarbonized Heat Energy Supply System using Groundwater Resources"

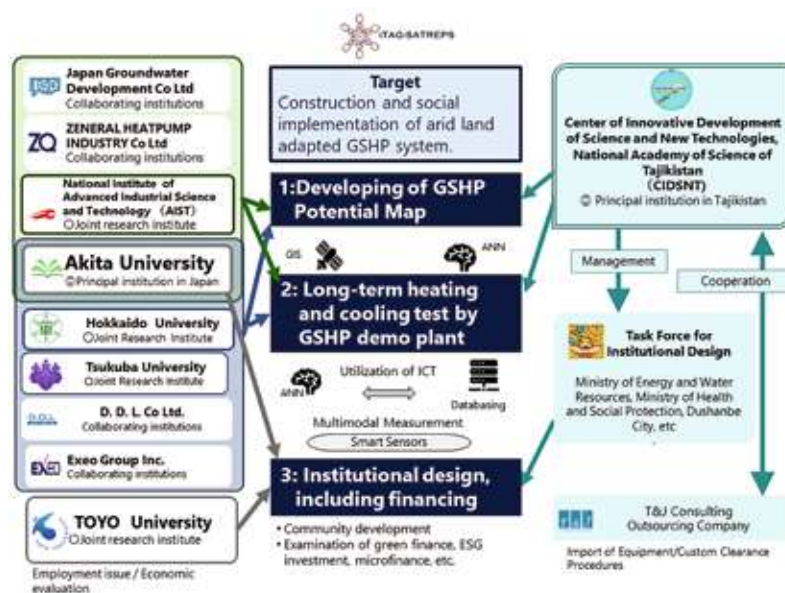
(Project duration: 2021 to 2026; 2021 was a preparation year)

This research aims to contribute to regional stability and take countermeasures against global warming through improving energy conditions and creating jobs by building and popularizing the “Advanced Arid Region Geothermal Heat Pump System (Tajikistan Model)” integrating ICT technology, including AI, in Tajikistan, a country that suffers from temperature extremes and does not have significant oil and natural gas resources. Specifically, the project focuses on the following three research topics: (1) Development of groundwater flow and heat transport model based on field surveys, GIS data and AI for maps of potential use of geothermal and groundwater heat energy.

(2) Implementation of long-term heating and cooling tests using a demonstration plant based on multi-modal measurement and AI.

(3) Planning a system for dissemination of the “Tajikistan model.” The plan is to develop an optimal geothermal heating and cooling system based on (1) and (2) using AI, which will be reflected in the system planning for (3). In addition, the project involves working with stakeholders to develop and introduce a system for the industrialization of geothermal systems and the creation of jobs as a result, including the provision of financing.

iTAG-SATREPS stands for “Innovative Tajik-Akita GSHP system” SATREPS project.



Messages from International Students



Hu Bin
From China

Dept. of Resource Policy and Management

I choose this major because global warming has become a serious issue that cannot be ignored. However, it is not easy to solve such a worldwide problem, so I am very interested in how various countries and international organizations will deal with it.

Secondly, as a relatively new major with relatively few talents, I hope I can make my own contribution through learning. It is a liberal arts major, but you can also learn science knowledge, such as mining, metal science, etc. Besides, this major covers a wide range of fields, such as energy resources, renewable energy, economics, international cooperation, etc. The number of students in this department is around 30, so the small class size allows me to get familiar with the professors.

Another highlight of this major is the English teaching. From the second year, courses are basically taught in English, so even students who are not confident in Japanese can fully understand the content of the class. In the third year, everyone will be asked to go overseas for fieldwork. This is my favorite project. I went to America and joined the IAEE Conference, which really broadened my horizons. Actually, I was worried when I came to Akita because there were not many foreigners, but classes have many group discussions and group activities, which gave me more opportunities to get to know different students and get familiar with them. So, I really enjoy studying in this department.



**Mradipta Lintang
Alifcanta Moktikanana**
From Indonesia

Dept. of Geosciences, Geotechnology, and Materials Engineering for Resources

I decided to continue with my PhD at Akita University because it has been a leader in Earth Resource Science Education and Research in Japan for over 100 years, with its high-value visions and missions, advanced laboratory technologies, as well as high-level professors and lecturers. Offering classes in both English and Japanese makes it much easier for us international students to understand the courses and advance our knowledge. We also learn how to design our own research projects and conduct experiments in the laboratory. I am really impressed with the freely accessible laboratory resources and facilities that allow students to conduct research conveniently. The facilities and research atmosphere of Akita University are very supportive, with regular seminars that encourage lively and insightful discussions among students, professors, colleagues, and labmates. I am also amazed by the variety of opportunities offered to international students, such as internships at numerous institutions and companies, involvement in many research projects, teaching or research assistant positions, attending conferences abroad, and international research collaboration to gain global exposure. As an international student trying to fit in with a new living environment, I feel that our professors and colleagues are very warm and welcoming, making it relatively easy to adapt to the culture and social life. Akita has felt like home, a comfortable place to live, and the perfect environment to study. I believe Akita University is the best place to learn and develop, to upgrade ourselves towards a better future.



Yewuhalashet Fissha
From Ethiopia

Dept. of Geosciences, Geotechnology, and Materials Engineering for Resources

Being able to go to school in Japan was my dream since I was a kid. I liked watching Japanese animation and since then, I started to become interested in Japanese culture. After I completed my master's degree, I decided to come to Japan to continue my Ph.D. in Mining Engineering and chose Akita University as my destination. I'm glad to be able to experience a wonderful life at Akita University as an international student. Akita University takes great care of us with the presence of the International Affairs Division (IAD), and international students can easily find help, either from other international students who arrived a couple of years earlier or from tutors who are Japanese students willing to help us as we study at Akita university.

My time at Akita University is very fruitful and memorable, with many helpful teachers and precious friends. I was fortunate enough to receive the Akita University fellowship program for Ph.D., which provided financial support and allowed me to save time that I would otherwise have had to spend on part-time work, and concentrate on my research. Besides, the fellowship program creates a lot of opportunities for Ph.D. students to discuss different research topics and share different experiences.

Life here at Akita University for me is relaxing, fun, interesting, and overall, a great experience that I will never forget.

Partner Universities

The Faculty of International Resource Sciences has agreements with many universities inside and outside Japan, with an emphasis on the promotion of academic exchange.

While our partner universities have strongly supported our outgoing students for the Resource Sciences Fieldwork Abroad Program, the exchange of researchers is actively carried out to promote research with each other.

Overseas Partner Universities

Inter-University Agreements*

- Heilongjiang University (China)
- Griffith University (Australia)
- St. Cloud State University (U.S.A.)
- Hanbat National University (South Korea)
- Belarusian State Medical University (Belarus)
- Central South University (China)
- Liaoning Technical University (China)
- Dalian Minzu University (China)
- Lunghwa University of Science and Technology (Taiwan)
- Lanzhou University (China)
- Jilin University (China)
- Northeastern University (China)
- Wonkwang University (South Korea)
- Kangwon National University (South Korea)
- Hanoi University of Science and Technology (Vietnam)
- University of Transport and Communications (Vietnam)
- Mongolian University of Science and Technology (Mongolia)
- Botswana International University of Science and Technology (Botswana)
- Lapland University of Applied Sciences (Finland)
- Donghua University (China)
- University of Cagliari (Italy)
- Kenyatta University (Kenya)
- Tongji Medical College, Huazhong University of Science and Technology (China)
- Mongolian National University of Education (Mongolia)
- University of Haifa (Israel)
- University of Bucharest (Romania)

Inter-Department Agreements

- Faculty of Engineering, Hasanuddin University (Indonesia)
- Red Sea University Faculty of Earth Sciences and Faculty of Marine Sciences (Sudan)
- Technical Faculty in Bor, University of Belgrade (Serbia)
- The AGH University of Science and Technology (Poland)
- Faculty of Geological Engineering, Universitas Padjadjaran (Indonesia)
- Faculty of Science, Kasetsart University (Thailand)
- Institut national de la recherche scientifique (Canada)
- National Institute of Chemistry, Technology and Metallurgy, University of Belgrade (Serbia)
- Faculty of Mineral Technology Universitas Pembangunan Nasional “Veteran” Yogyakarta (Indonesia)
- Uzbek-Japan Innovation center of Youth(UJICY) (Uzbekistan)
- Centre of Innovative Development of Science and New Technologies of the National Academy of Science of Tajikistan (Tajikistan)
- University of Geological Sciences, Uzbekistan(UGS) • Uzbek-Japan Innovation center of Youth(UJICCY) (Uzbekistan) (Tripartite)
- Navoi State Mining Institute (Uzbekistan)
- Faculty of Engineering, University of Alberta(Canada)



Joint Laboratory of Akita University and Padjadjaran University
Established in Padjadjaran University in 2019.

Akita University Overseas Hubs*

Country	Base name
Mongolia	Akita University Mongolia Office
Thailand	Joint Laboratory of Akita University and Chulalongkorn University
Indonesia	Joint Laboratory of Akita University, Faculty of International Resource Sciences and Trisakti University
	Joint Laboratory of Akita University and Padjadjaran University
Botswana	Akita University Botswana Office
UAE	Joint Laboratory of Akita University and UAE University
Uzbekistan	Akita University Satellite Lab in Uzbekistan for Earth Resources Studies



Akita University Botswana Office
Established in Botswana International University of Science and Technology in 2017.

*Lists of universities and hubs that have a connection with Faculty of International Resource Sciences.

Q&A

Q. What kind of place is Akita?

A. Akita is located on the Sea of Japan side of northern Honshu. It is home to World Heritage sites such as, Shirakami-Sanchi and Lake Tazawa, the deepest lake in Japan. Akita is also well-endowed with abundant nature symbolized by the Oga Peninsula and Mount Hachimantai. Akita marks the seasons with cherry blossoms in spring, the Kanto Festival - one of the three major Tohoku festivals in summer, beautiful autumn foliage, as well as winter sports and festivals that can only be enjoyed in Akita's winter.

Akita University's campus is located in Akita City, the capital of Akita Prefecture, where Public transportation is convenient and the cost of living is much lower than in the Tokyo area, making it the perfect environment for international students.

Q. How many international students attend the school?

A. There are about 250 international students enrolled at Akita University. In the Faculty of International Resource Sciences, there are international students and non-degree seeking researchers from countries such as Mongolia, Indonesia, Malaysia, Vietnam, China, the Philippines, Botswana, and more.

Q. What level of Japanese is required?

A. In our faculty, specialized courses from the second year are entirely taught in English, whereas general and fundamental education subjects and specialized courses for first year students are all conducted in Japanese. Therefore, students will need adequate Japanese language skills.

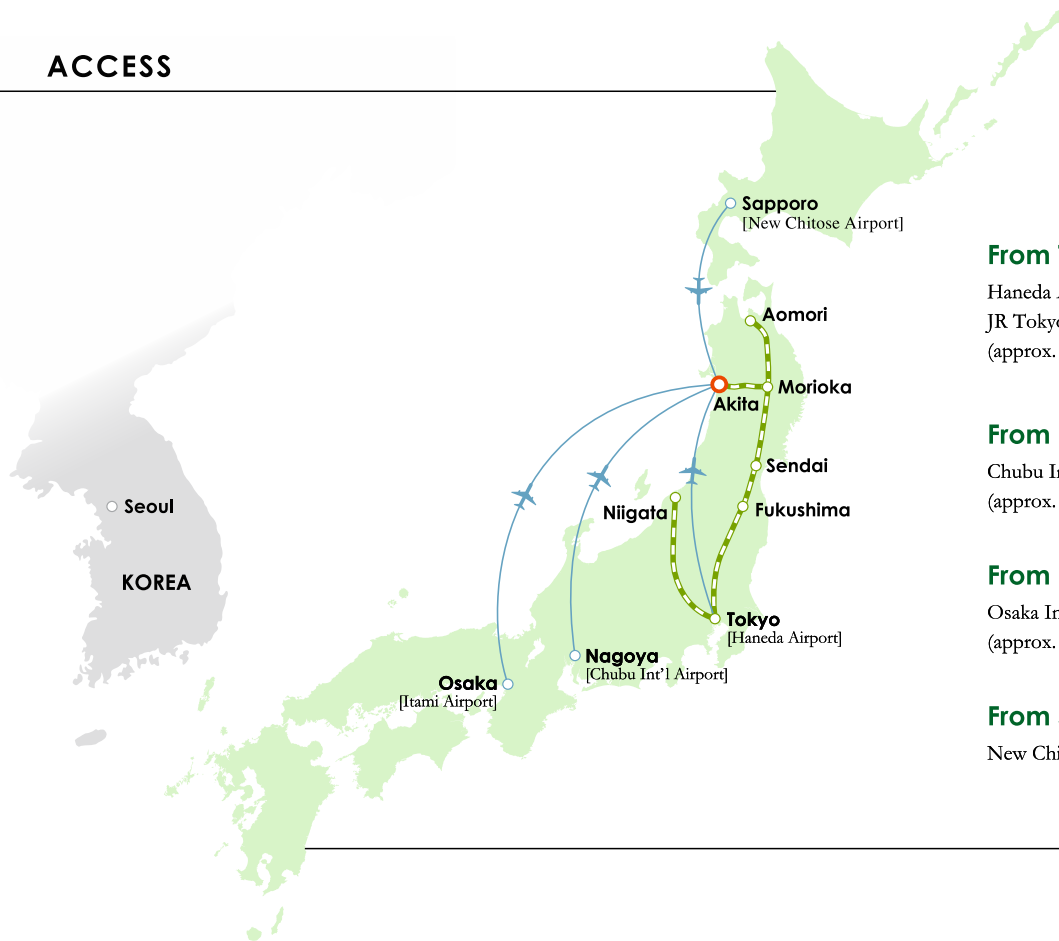
At Akita University, classes are offered to international students to improve their Japanese language proficiency and provide a better understanding of Japanese society and culture.

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

A. There are several forms of financial aid available to international students, including the Japanese government's MEXT scholarship program, as well as scholarships from foreign governments or private organizations. At the university level, we provide financial support to students whose academic excellence is recognized but face difficulty making payments for financial reasons. This support may take the form of exemptions, reductions, or deferments of admission and 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.



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)



Akita Kanto Festival

A festival held from August 3rd to 6th 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.



Akita University

Faculty of International Resource Sciences

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