Akita University (National) Graduate School of International Resource Sciences

Program name

Department of Earth Resource Engineering and Environmental Science

- Degrees: Master of Resource Sciences Master of Engineering
- Credit and years needed for graduation: 30 credits, 2 years
- Address: 1-1 Tegatagakuen-machi, Akita City, 010-8502 Japan



Features of University https://www.akita-u.ac.jp/eng/index.html

Akita University is a national university established in 1949 with following four graduate schools; International Resource Sciences, Education, Medicine, and Engineering Science. The total number of students is approximately 5,000 among which 650 are enrolled in graduate schools.

Akita University is situated in Akita city, a capital of Akita prefecture located in the north-western part of the main island of Japan about 500 kilometers far from Tokyo. The population of Akita prefecture is about 90,000 and Akita city is home of 300,000.

Because of its relatively small size, Akita University could ensure foreign students to enjoy closer cares and guidance from teaching and administrative staff and to concentrate themselves on their course and research works.

Akita is rich in nature, history, and culture. The climate is mild to cool throughout a year although snow prevails in winter between late December and early March. There remains variety of traditional and cultural events with the most notable one being Akita Lantern Festival conducted in summer.

Above all, Akita University is proud of its commitment and capability to provide learners with very qualified education with special attention to practical aspect.

Features of Graduate School https://www.akita-u.ac.jp/shigen/eng/graduate/

The Graduate School of International Resource Sciences was established to educate specialists with wide-ranging knowledge in field from earth sciences through to resource development and environmental issues. Graduates will aim for achieving a sustainable society and operate as global leaders as a result of pursuing advanced studies and research. Graduates also expertise in the fields of 1) Resource and Earth Sciences and 2) Resource Development and Environmental Science. All subjects are taught in English.

The Graduate School of International Resource Sciences comprises a two-year Master's Degree Program followed by a three-year Doctor's Degree Program. The Master's Degree Program consists of two departments — Earth Resource Science, and Earth Resource Engineering and Environmental Science.

Department of Earth Resource Science

This department educates students in specialist areas ranging from the genesis of minerals, rocks, and geological structures to resource exploration and evaluation technologies with emphasis placed on the mechanisms and environments of the generation of mineral and energy resources. Our aim is to produce professionals with new specialist knowledge and skills in resource science, as well as a broad knowledge of earth sciences, in order to meet societal needs.

Department of Earth Resource Engineering and Environmental Science

Through advanced specialist education and research on aspects from resource extraction, development and production engineering of natural resources, our department aims to produce engineers who will approach next-generation resource development from a comprehensive perspective. The target of natural resources includes mineral and metals, oil and gas, geothermal energy and others, through to the latest technologies in the fields of recycling and refining technologies and wastewater treatment, and resource economics and management. We seek to produce global professionals with the latest specialist skills and a broad knowledge of resource development and environmental science in order to meet societal needs.

Features of the Program

Master's Degree Program of the Graduate School of International Resource Sciences of the Akita University provides students with essential research knowledge and skills on problems related to energy and mineral resource development and geology. Those who complete the program seek employment in various resource - related public sectors or companies.

We have educated many students from Afghanistan, Mongolia, China, Botswana, Chile, and several other countries through the Human Resources Development in the Mining Sector (KIZUNA Program) and other programs. Moreover, we have an original "short-stay program" for postgraduate students. Almost all the graduates and "short-stay program" students are in significant positions in governmental organizations and private sectors, such as the ministry of mining or state enterprises. Our program requires and provides all of the students to accumulate the field experience based on the collaboration among universities, government, and the private sector. Our program offers the knowledge and skills necessary to be active and socially responsible leaders in the resource.

We have some experience in the education of international students, including from Central Asia and the former Soviet Union. Faculty members know that the differences between Japan and such countries in the education system, and always pay due attention to those students. GSIRS will assign not only an academic mentor but also a tutor from Japanese students to each international student. JDS fellows, therefore, quickly consult with mentor and tutor about the academic issue and social issue of life in Japan from the beginning of their program.

Necessary Curriculum to Obtain the Degrees

A master's degree is awarded to students satisfying the following requirements: At least two years' enrollment; earning a minimum of 30 credits; successful completion of a master's thesis; and passing the final comprehensive exam. A master's degree in either Resource Science or Engineering is awarded to students majoring in Earth Resource Engineering and Environmental Science.

Courses	Credits Required	Remarks
Specialized Courses	A minimum of 14 credits (elective)	A minimum of 10 credits in the major and a minimum of 4 credits from the major and/or other majors combined
General Courses	4 credits	Including "Research Ethics"
Seminars (Specialized Courses)	2 credits (required)	
Research Project	10 credits (required)	
Total	A minimum of 30 credits	

Credits required for the Completion of the Master's Program

Course List [General Courses]

Course Title	Credits	
Course mile	Required	Elective
Research Ethics	*	
Advanced Mineral Economics I		1
Advanced Mineral Economics II		1
Advanced Global Resource Science I		1

1
1
1
1
2
1
1
1
1
2

Asterisk (*) indicates subject which is required but earn no credits.

[Specialized Courses]

Course Title	Credits	
	Required	Elective
Petroleum Reservoir Engineering		2
Drilling Engineering		2
Advanced Rock Engineering I		1
Advanced Rock Engineering II		1
Advanced Rock Engineering III		1
Advanced Rock Engineering IV		1
Advanced Geochemistry III		2
Advanced Resource Recycling and Refining		2
Advanced Material Production Engineering I		1
Advanced Material Production Engineering II		1
Advanced Mineral Processing		2
Separation Engineering		2
Design for International Resources Engineering I		1
Design for International Resources Engineering II		1
Resource Management I		1
Resource Management II		1
Resource Politics		2
Advanced Earth Resource Engineering and Environmental Science		1
Basics of Mining Informatics		1
Seminars of Earth Resource Engineering and Environmental Science	2	
Research Project of Earth Resource Engineering and Environmental Science	10	
Advanced Energy Geology		2
Applied Micropaleontology		2
Data Analysis for Paleoenvironmental Reconstruction		2
Economic Geology Applicable to both Industry and Academia I		1
Economic Geology Applicable to both Industry and Academia II		1
Mineral Resources and their Exploration and Assessment I		1
Mineral Resources and their Exploration and Assessment II		1
Resource Mineralogy I		1
Resource Mineralogy II		1
Advanced Mineralogy		2
Advanced Petrology I		1

Advanced Petrology II	
Volcanic Geology	
Advanced Structural Geology	
Advanced Petroleum Geology	
Advanced Petroleum Exploration	
Resource Exploration in Japan	
Advanced Earth Resource Science I	
Advanced Earth Resource Science II	

List of faculty members capable of guiding JDS Fellows

Education and Research Areas	Faculty Member
Mineral economics and Mining Informatics Evaluation issues related to sustainable resource supply, consumption, recycling and environmental impacts using methods from economics and system engineering, and applying informatics to resource development to create new mining technology.	Prof. ADACHI Tsuyoshi Associate Prof. TORIYA Hisatoshi
Resource management Cultural anthropology, social ecology, hydrology and area studies as a basis for integrated sustainable resource management and community development at local, national, regional and global levels with particular focus on indigenous knowledge and participatory approach	Prof. NAWATA Hiroshi
Resource Policy Education and research on analysis and evaluation for sustainable resource governance based on political science, public policy, economic systems, and energy systems	Prof. INAGAKI Fumiaki Associate Prof. ODA Junichiro
Circulation of resource environment substances Mineral resources, geothermal resources, water resources, natural disasters, environmental protection, and resource use based on the characteristics of water, gas, and magma and the movement and circulation of these through the surface and interior of the Earth	Associate Prof. OGAWA Yasumasa
Rock engineering Basics and application of rock engineering in resource development and crust development	Prof. IMAI Tadao Associate Prof. KIZAKI Akihisa
Energy resource engineering Theoretical and applied studies on the development of subterranean water and energy resources such as petroleum, natural gas, and geothermal energy	Prof. FUJII Hikari
Geosystem engineering Basic and applied researches on oil & gas, geothermal and other related resource developments with focus on drilling engineering	Prof. NAGANAWA Shigemi
Mineral and resource processing Mineral processing and separation engineering, and development of recycling technologies for secondary resources and wastewater treatment for environment	Prof. SHIBAYAMA Atsushi Associate Prof. HAGA Kazutoshi Associate Prof. JEON Sanghee
Resource recycling process engineering Smelting and refining principles in material manufacturing processes and the theory and practice of effective use of by-products from material manufacturing	Associate Prof. TAKASAKI Yasushi

Academic Schedule

Academic Schedule in the academic year is as follows (for Reference).

Fall semester (October 1 - March 31)

October 1
October 1
Early October
Late December – Early January
Mid-February – Early April

Spring semester (April 1 - September 30)

Spring semester classes begin Course Registration Summer Break Graduation Ceremony Early April Mid-April Mid-August – September 30 Late September

Facilities

https://www.akita-u.ac.jp/honbu/global/en/abroad/inbound/info.html https://www.lib.akita-u.ac.jp/top/en/

Accommodations

Akita University has two off-campus for international students and researchers: Akita University International Student House and Akita University International House. There's also Nishiyachi Dormitory which is both for Japanese and International students. It cannot be guaranteed for them to get ones due to short supply. However, many private apartments are available near the campus and the university will provide support for foreign students to secure rooms accordingly.

University Library

The two University Libraries (the Central Library on Tegata Campus and the Medical Library on Hondo Campus), provide books, journals, audio-visual materials, electronic information, and other study materials for student use, while systematically managing and maintaining the collection.

•Number of books in the collection: Central Library: 433,000 books / Medical Library: 111,000 books

Mining Museum

The mining museum is a facility attached to the Graduate School of International Resource Sciences for the storage and display of materials and specimens from various fields related to the earth and its resources, that have been collected during the University's research activities. Its history began in the exhibition room of Akita

Mining School, which was founded in 1910 to train mining engineers. The mining museum was established when Akita University was inaugurated. A new building was constructed in 1961, and this is the Mining Museum as it stands today. In the public exhibition building, we have minerals and ores of various colors and shapes on display, as well as rare rocks and fossils. Here you can learn about the history of the earth, resource development and mining technology by observing actual machines and equipment used for mining, along with precision models. In addition, we also introduce the latest research of the University and research results from a wide range of academic fields through limited period special exhibitions, collaborative and partnership exhibitions, and public lectures.

International Student Support

International Affairs Division is designated to support foreign students from every aspect of their daily lives in Akita both on-campus and off-campus including the Japanese language classes and intercultural events, so that foreign students could pursue their academic goals in Akita in more comfortable environment.

University Health Center are also available for foreign students to use. The center provides free basic medical and counseling services.

Message for Applicants

The Graduate School of International Resource Sciences (GSIRS) of Akita University is a new graduate school that was established in 2016. But, 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 100 years, Akita University has played a leading role in Japan's resource industry, producing many top engineers and researchers in metals, non-metals, and petroleum resources.

The GSIRS and Faculty of International Resource Sciences (FIRS) was established to provide a more influential international platform for research and education. It will function as a national center for resource sciences, fostering global specialists to work at the forefront of this field. The curriculum includes many distinctive features to promote high levels of specialization. Students gain hands-on experience in the best practices in resource exploration and development inside and outside Japan.

Akita is an ideal area for research in the resource sciences, with its abundance of petroleum oil fields and metal mines. A classic Japanese Cenozoic sequence is exposed on the Oga Peninsula, where one can observe geologic history that dates from 20 million years ago, marking the beginning of the opening of the Japan Sea, to the recent. We look forward to welcoming students to Akita, who are curious about learning more about our planet.