



# Graduate School of International Resource Sciences

**Graduate School of International Resource Sciences was established in April 2016.**

The Graduate School of International Resource Sciences was established to cultivate specialists with wide-ranging knowledge in fields from earth sciences to resource development and environmental conservation who can operate as global leaders. It provides them with advanced knowledge and expertise in the fields of (1) Earth Resource Sciences and (2) Earth Resource Engineering and Environmental Sciences. All the lectures are conducted in English.

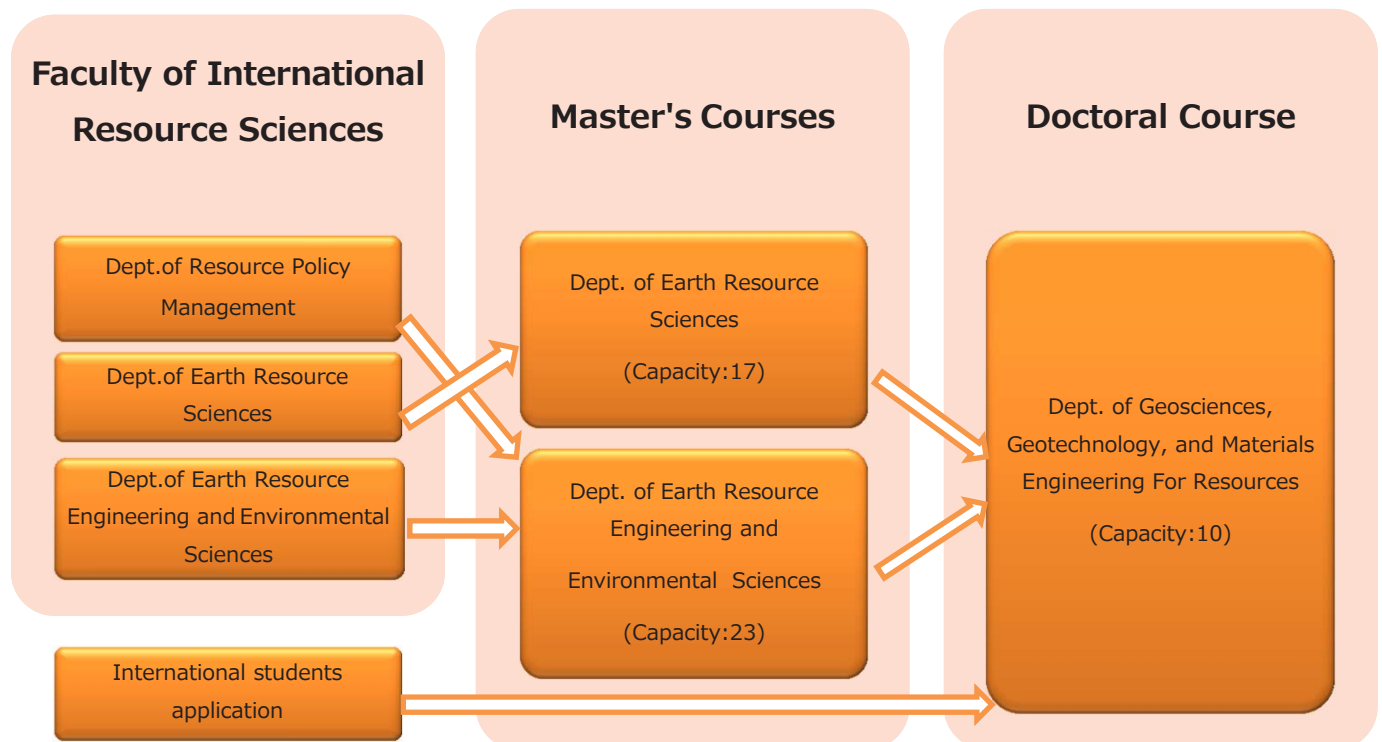
## 【Master's Degree Program】

This program provides students with basic research knowledge and skills on problems related to energy and resource development, production and distribution. Those who successfully complete the program usually seek employment in various resource-related companies or public sectors.

## 【Doctoral Degree Program】

This program trains young scholars who aim to pursue careers doing cutting-edge research in geology, mining and energy sciences. Most graduates get jobs in academia or policy-making institutions.

## Flowchart of study



## Content of Education and Research Areas

### Earth Resource Sciences

Field	Content	Faculty Member
Paleoenvironmental geology	Stratigraphy, paleontology, sedimentology, paleoceanography and historical geology as a basis for the exploration of petroleum, coal, natural gas, and other energy resources	Associate Prof. Makoto Yamasaki  Associate Prof. Stephen P. Obrochta
Economic geology	Broad review and analysis of the economic geology profession, including its societal context, the relevant metallogenic science, and the fundamentals and practice of mineral exploration	Prof. Andrea Agangi
Petrology	Geological and petrological analysis on various volcanic phenomena including eruptions, collapse, lahar, fluid-magma interaction, magmatic differentiation, and so on	Prof. Tsukasa Ohba
Structural geology	Fracturing and ductile deformation of rocks and minerals	Lecturer Osamu Nishikawa
Mineralogy	Wide scope of mineralogy, including crystallography, chemistry, mineral-forming conditions, and application to metallic and non-metallic ore deposition	Prof. Yasushi Watanabe  Associate Prof. Takuya Echigo
Sedimentology and petroleum geology	Formation of petroleum, natural gas, and unconventional energy grounded in basic knowledge of stratigraphy, structural geology, geochemistry, and paleoenvironmentology, as well as exploration methods for these energies	Prof. Hiroyuki Arato  Associate Prof. Shun Chiyonobu

## Earth Resource Engineering and Environmental Sciences

Field	Content	Faculty Member
Applied geophysics	Theory, experiments, measurement, analysis, and interpretation in relation to the use of geophysical data such as seismic waves and electromagnetism in geophysical surveys	
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	Prof. Daizo Ishiyama  Associate Prof. Yasumasa Ogawa
Rock engineering	Basics and application of rock engineering in resource development and crust development	Prof. Tadao Imai  Associate Prof. Akihisa Kizaki
Mining Technologies	Application through an interdisciplinary approach, such as an ICT, Soft-computing and Robotics to create new mining Technologies	Prof. Youhei Kawamura
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. Hikari Fujii Prof. Shigemi Naganawa
Mineral and resource processing	Mineral processing and separation engineering, and development of recycling technologies for secondary resources and wastewater treatment for environment	Prof. Atsushi Shibayama  Associate Prof. Kazutoshi Haga
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. Yasushi Takasaki
Mineral economics	Modelling and evaluation of issue relating to sustainable resource supply and consumption, recycling and environmental impact using methods from economics, financial engineering and systems engineering	Prof. Tsuyoshi Adachi
Resource Management	Cultural anthropology, social ecology, and area studies as a basis for integrated resource management and community development at local and regional levels with a particular focus on indigenous knowledge and participatory approach	Prof. Hiroshi Nawata