Graduate School of

Environmental Science

Division of Environmental Science Development
Division of Earth System Science
Division of Biosphere Science
Division of Environmental Materials Science

HOKKAIDO UNIVERSITY

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Dean

Introduction

The Graduate School of Environmental Science provides strong environmental science programs that enable students depending on their area of specialty, to clarify the causes and effects of environmental problems, provide the technology for resolution of these problems, and achieve a comprehensive understanding of complex interrelated issues so that they can propose and implement integrated plans to solve the problems. The Graduate School of Environmental Science consists of four divisions outlined in the following pages, and is run by about 140 active faculty members belonging to various departments and research institutes cooperatively. We also offer an educational program conducted entirely in English, "English Program of Environmental Earth Science for Sustainable Society" (EPEES). You are welcome to visit us at any time. Together, we can address current and future environmental issues to preserve a sustainable environment on our planet.

Organization

Graduate School of Environmental Science

- Division of Environmental Science Development
  - Human and Ecological Systems
  - Environmental Adaptation Science
  - Practical Science for Environment
  - Global Environmental Management
- Division of Earth System Science
  - Geochemistry
  - Atmosphere-Ocean and Climate Dynamics
  - Cryosphere Science
- Division of Biosphere Science
  - Ecosystem Biology
  - Ecological Genetics
  - Molecular Biology
  - Plant Ecology
  - Animal Ecology
  - Marine Biogeochemistry and Physics
  - Aquatic Biology
  - Forest Conservation
  - Agro-Ecosystem Science
- Division of Environmental Materials Science
  - Biomaterials Chemistry
  - Environmental Nano-Materials
  - Molecular Photonics and Electronic Science
  - Environmental Catalytic Chemistry

Participants

Faculty of Environmental Earth Science
Institute of Low Temperature Science
Research Institute for Electronic Science
Catalysis Research Center
Field Science Center for Northern Biosphere
Faculty of Fisheries Sciences

International programs and affairs

■ PARE program

- This program is one of the "Re-Inventing Japan Project" - Support for the Formulation of Collaborative Programs with ASEAN Universities, funded by MEXT in Japan.
- PARE Program aims to foster Frontiers for Practical Solutions in a Population-Activities-Resources-Environments (PARE) Chain in ASEAN countries.
- The Graduate School of Environmental Science has started this program from October of 2012 with other four faculties and an institute of Hokkaido University. Three universities of Thailand (Chulalongkorn University, Kasetsart University and Thammasat University) and three universities of Indonesia (Bogor Agricultural University, Institute of Technology in Bandung and University of Gadjah Mada) are joining in this program.

■ RJE3 program

- This program is also one of the "Re-Inventing Japan Project" funded by MEXT in Japan.
- The RJE3 program has started from October of 2014 and is intended to develop professional groups that play leading roles in the fields of sustainable environment, sustainable culture and sustainable development in the Far East and the Arctic Circle. To this end, the East Russia-Japan Expert Education Consortium (RJE3 Consortium) was formed based on the achievements and networks regarding joint field studies developed between Hokkaido University and Russian universities (Far Eastern Federal University (Vladivostok), North-Eastern Federal University (Yakutsk), Sakhalin State University (Yuzhno-Sakhalinsk), Pacific National University (Khabarovsk), and Irkutsk State University (Irkutsk)) in terms of the environment, natural disasters, ethnic groups, languages, culture and other areas.

■ EPEES program

- This program is an English Program of Environmental Earth Science for Sustainable Society(EPEES) for master's and doctor's courses, started from April of 2014.
- EPEES aims to foster professionals who can contribute to the protection of the global and local environments having broad knowledge. All of works of this program is done in English. The enrollment of the participants is decided by the pre-arrival admission.

■ Other programs

- Student Exchange Support Program (Scholarship For Short-Term Study In Japan)
- Special Grant Program for International Students / Research Assistant Program of Graduate School of Environmental Science
- Budget of Hokkaido Univ. for interchange between universities of Vietnam and Myanmar and Hokkaido Univ.
- The International Priority Graduate Programs (PGP)
  -Advanced Graduate Courses for International Students-
- Antarctic program
- ABE Initiative program

Information for Students from Overseas

Education: We welcome students from overseas. We offer a program taught entirely in English, so a student can get a Master's or Doctoral degree by taking classes only in English. Nevertheless, we recommend that foreign students learn Japanese, and the International Student Center, Hokkaido University prepares Japanese language courses.

Admission: Entrance examinations are held in August and February for each year. The academic year starts in April, but some doctoral and master's courses also start in October. Applicants are strongly advised to contact faculty members in their research field of interest before applying for entrance examinations.

Scholarship and exchange programs: Scholarships from Hokkaido University,the Japanese government and other organizations are available for foreign students. For more information about scholarship, visit International Student Center, Hokkaido University Website http://www.isc.hokudai.ac.jp/.We also have international exchange programs with other universities.The list of partner institutions is shown at http://www.hokudai.ac.jp/en/relations/partner_institutions.html

Hokkaido University Office: Overseas Offices are situated in Beijing (China), Seoul (Korea), Helsinki (Finland) and Lusaka (Zambia). Staff at those offices provides general support services to international students. Please feel free to contact our office if you have any questions about Hokkaido University.

For details: Visit our website http://www.ees.hokudai.ac.jp/en_index.html, and Hokkaido University Graduate School Information for prospective International Students website http://grad.isc.hokudai.ac.jp/.

Graduate School of Environmental Science

Division of Environmental Science Development

Humankind is currently facing many green issues, represented by global warming, biodiversity reduction, and ecosystem degradation. The advance of environmental sciences is prerequisite to save the earth through the conservation, remediation and restoration of ecosystems at various scales. A sustainable and low-carbon society should be created for future generations. The Division of Environmental Science Development has been established for solving these issues based on solid scientific foundations. To progress the interdisciplinary studies, we mobilize all of the natural sciences and the others. Students in this division are expected to understand and solve such environmental issues.

- Course in Human and Ecological Systems
  - Symbiosis in Nature
  - Environmental Conservation
  - Sustainability and Low-Carbon Society
  - Mathematical Model
- Course in Environmental Adaptation Science
  - Environmental Adaptation
  - Reduction of Environmental Impact
  - Environmental Remediation
  - Risk Assessment and Management for Chemicals
- Course in Practical Science for Environment
  - Education for Sustainable Development (ESD)
  - Environmental Education
  - Earth System Science
  - Civic Pride
- Course in Global Environmental Management
  - Influence of Global Warming
  - Resource and Risk Management
  - Environmental Education
  - International Perspective

http://www.ees.hokudai.ac.jp/division/kigaku/?easiestml_lang=en

Division of Biosphere Science

The biosphere is the global ecological system integrating all living organisms. The mission of this division is to introduce the mechanisms how biological diversity is maintained and developed that are responsible for the function of the biosphere. These mechanisms include molecular or cellular level and interactions between different organisms to form each biome. Another goal of education in this division is to provide students with the viewpoint of feedback effects of living organisms on forming physicochemical environments and to ensure they gain the ability to work on important environmental issues. Bioremediation is also within our scope.

- Course in Ecosystem Biology
  - Adaptation in the Cryosphere, Biodiversity, Cycles of Material
- Course in Ecological Genetics
  - Genetic Diversity, Evolution, Phylogeny
- Course in Molecular Biology
  - Environmental Microbiology, Plant Molecular Biology, Bioremediation
- Course in Plant Ecology
  - Plant Community, Vegetation, Forest Soil
- Course in Animal Ecology
  - Population Ecology, Community Ecology, Conservation Biology
- Course in Marine Biogeochemistry and Physics
  - Fisheries Oceanography, Marine Biogeochemistry, Physical Oceanography
- Course in Aquatic Biology
  - Aquatic Biology, Developmental Biology, Aquatic Ecology
- Course in Forest Conservation
  - Forest Ecology, Ecosystem Function
- Course in Agro-ecosystem Science
  - Cropping Systems, Land use and Livestock Production Systems, Biomass

http://www.ees.hokudai.ac.jp/division/bio/?easiestml_lang=en

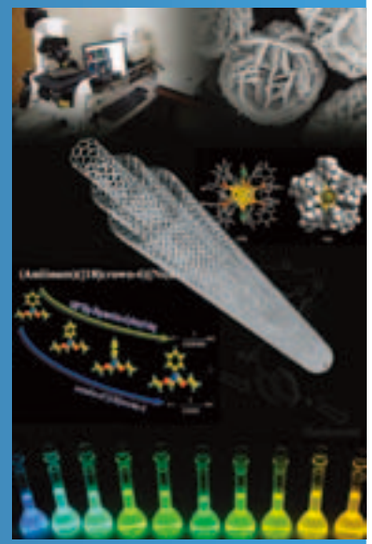
Division of Earth System Science

This division offers students the opportunity to study earth sciences and to thus understand and predict the Earth's environment and its variability on broad time scales. The division's scope includes detection, attribution, and projection of local- to global-scale environmental and climatic changes. The division has three courses to cover various fields of earth sciences. Each of the courses has an extensive curriculum to provide education of geosciences from fundamental to advanced levels in order to cultivate specialties. The study of the Earth's environment requires interdisciplinary cooperation, so a broad perspective is also required. Thus the division offers multidisciplinary classes as well.

- Course in Geochemistry
  - Geochemical Cycles,
  - Paleoenvironment,
  - Environmental Chemical Analysis,
  - Field Science of Land, Ocean, and the Atmosphere,
  - Climate Change
- Course in Atmosphere-Ocean and Climate Dynamics
  - Field Observations,
  - Numerical Modeling of Atmosphere and Ocean,
  - Weather and Predictability,
  - Climate Systems,
  - Sea Ice and Polar Sciences
- Course in Cryosphere Science
  - Snow and Ice,
  - Cold Region Hydrology,
  - Cloud Science,
  - Atmospheric Boundary Layer,
  - Planetary Glaciology

http://www.ees.hokudai.ac.jp/division/earth/?easiestml_lang=en

Division of Environmental Materials Science



Environmental pollution and environmental destruction are serious problems throughout the world. In order to resolve these problems, comprehensive chemistry-based research and understanding of the natural environment are essential, because chemical reactions are the basis of all natural phenomena. The Division of Environmental Materials Science conducts cutting-edge research and special education on the distribution and activity of chemical substances involved in environmental problems and on the development of novel methods for environmental remediation and environmental protection. We foster students' talents so that students can play a central role in problem solving.

- Course in Biomaterials Chemistry
  - Synthetic Organic Chemistry,
  - Synthetic Carbohydrate Chemistry,
  - Marine Natural Product Chemistry,
  - Electroanalytical Chemistry
- Course in Environmental Nanomaterials
  - Chemosensors,
  - Environmental Electrochemistry,
  - Supramolecular Chemistry,
  - Environmental Catalysis
- Course in Molecular Photonics and Electronics Science
  - Molecular Photonics,
  - Molecular Electronics,
  - Photoexcitation Dynamics,
  - Biophotonics
- Course in Environmental Catalytic Chemistry
  - Surface Science,
  - Photocatalysis,
  - Spectroscopy,
  - Electrochemistry

http://www.ees.hokudai.ac.jp/division/material/?easiestml_lang=en

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