



**english
engineering
education
PROGRAM**

HOKKAIDO UNIVERSITY
Graduate School of Engineering

Master's and Doctoral Degrees
International Programs



**Study in English
in JAPAN!**

WELCOME TO



A brief HISTORY



- 1876** Hokkaido University founded as Sapporo Agricultural College
- 1918** Hokkaido Imperial University was established (one of the seven Former Imperial Universities)
- 1924** Faculty of Engineering was established with 4 Departments: Electrical Eng., Mechanical Eng., Civil Eng., and Mining Eng.
- 1947** Hokkaido Imperial University was renamed to Hokkaido University
- 1953** The Graduate School of Engineering was established
- 2000** English Graduate Program in Social Environmental Engineering (EGPSEE) was established
- 2005** Center for Engineering Education Development (CEED) was established
- 2007** "EGPSEE" was restructured to cover more engineering fields and renamed to "English Engineering Education (e³) Program".
- 2010** Professor Emeritus Akira Suzuki awarded the Nobel Prize in Chemistry
- 2014** Hokkaido University was selected for the Top Global University Project (a university with the potential to become one of the top 100 universities in the world).

Greeting from Prof. Toyoharu Nawa, Dean of the Faculty and Graduate School of Engineering



Welcome to the Graduate School of Engineering at Hokkaido University! I am excited to see that you are interested in our international program, e³. Over the past 150 years, our university has formulated educational philosophies built on a "frontier spirit," promoting "all-round education," taking a "global perspective," and pursuing "practical learning." These philosophies are as relevant as ever in today's world, with global competence playing a key role in the modern international education. The e³ program, started in 2000, aims to expand our university's reach beyond the boundaries of Japan. Multidisciplinary English education

allows our students to benefit from the best Japanese technology and gives them access to edge-cutting knowledge and an international environment, so that they can develop communication skills and cultural awareness, become flexible researchers and engineers in the diverse fields of science and technology, and graduate ready for global challenges. With the implementation of new initiatives, like the Top Global University program, our campus is going to become even more vibrant and international. I sincerely hope that you will join us here in the Graduate School of Engineering!



10 reasons why study engineering at Hokkaido University!

The e³ program was established in 2000 to foster global engineering human resources, and since then has actively attracted high caliber students from diverse educational and cultural backgrounds. Find out why e³ is for you!

1. Education in English

Do Master's or Doctoral degree entirely in English. More than 150 subjects are offered in English.

2. Fits your interest

Find the program that matches your interests from the wide range of fields covered by the 12 divisions of the Graduate School of Engineering.

3. Excellent academic reputation

Study in one of the top 10 Japanese universities, which is also ranked highly in Asia and the world.

4. Concentrate on research

Conduct research in well-equipped laboratories, including some of the world's most advanced facilities. Every graduate student gets his or her own study space.

5. Global Perspective

Study together with colleagues from all over the world, join e³ active social life, and create your own unique international experience.

6. More opportunities

Get internship offers from industry and foreign universities through the Center for Engineering Education Development.

7. We care!

Besides the great services for international students available around the university, e³ office will also support you and keep you updated, from entrance application to graduation.

8. We invest in future leaders

Through our program, you can apply for full-support scholarships or receive tuition discounts and small grants.

9. Commuting stress free

Study in one of the most beautiful campuses in Japan. You can live in a university dormitory or private apartment nearby, and commute in just a few minutes by bike or by walking.

10. Comfortable and reasonable

Enjoy good infrastructure, a beautiful environment, and relatively cheap living costs in the fifth largest city in Japan!



Ranking

World Universities Rankings (2014-2015)	
QS Asia (2015)	25
QS World	135
Times Higher Education (THE)	351

Facts

Hokkaido University (As of May 1st, 2015)	
Student Enrolment	17,868
Undergraduate	11,727
Graduate	6,141
International Students	1,570
Faculty and Staff	3,961
Partner Universities	413 in 57 countries

School of Engineering (As of June 1st, 2015)	
Student Enrolment	
Undergraduate (from 2nd year)	2,300
Master's	695
Doctoral	165
International Students	221
Faculty Staff	326
Non-teaching Staff	121

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CREATE YOUR OWN FUTURE!



Application

Apply for Master's or Doctoral degree program offered by e³ in one of 12 divisions.



Admission Calender

Hokkaido University follows a two semester system and admission is possible from either the Autumn semester, starting October 1st, or the Spring semester, starting April 1st.

The program offers a number of full support scholarships, but the application calendar differs for regular admission and admission with the Japanese Government MEXT e³ scholarship.

Requirements

Students who fulfill all the requirements and show high academic achievements, including higher than average GPA, may be accepted based on documents screening and an on-line interview with the supervisor.

Application deadlines

	Application deadline	Enrolment
Regular admission	November 15th	April 1st
	May 31st	October 1st
Admission with MEXT e ³ scholarship	November 15th	October 1st

Application documents

Check our web site for details.

Master's

The typical time required to complete this degree is 2 years.

ENTRY REQUIREMENTS

In order to obtain entry into the Master's Program you MUST:

- Hold a four-year Bachelor's Degree
- Have above average grades – 80%, or 3.0 on a 4-point GPA Scale (country-specific grading is considered)
- Have English proficiency equivalent to IELTS 6.0, TOEFL 79, TOEIC 670, or MTELP 75

*If your grade is below the minimum requirement you may either appear for the entrance exam at the university or enroll as a research student first, and then take the entrance exam after you arrive in Sapporo.

COMPLETION REQUIREMENTS

In order to obtain this degree, you MUST :

- Obtain 30 credits from the English Curriculum
- Be supervised in English
- Submit a thesis in English and be examined in English

Doctorate

The typical time required to complete this degree is 3 years.

ENTRY REQUIREMENTS

In order to obtain entry into the Doctoral Program you MUST :

- Hold a four-year Bachelor's Degree and a Master's Degree
- Have above average grades – 80%, or 3.0 on a 4-point GPA Scale (country-specific grading is considered)
- Have English proficiency equivalent to IELTS 6.0 TOEFL 79, TOEIC 670, or MTELP 75
- Have demonstrated your research potential through publications

*If your grade is below the minimum requirement you may either appear for the entrance exam at the university or enroll as a research student first, and then take the entrance exam after you arrive in Sapporo.

COMPLETION REQUIREMENTS

In order to obtain this degree, you MUST :

- Obtain 10 credits from the English Curriculum
- Be supervised in English
- Submit a thesis in English and be examined in English
- Satisfy all publication requirements set out by the division

Scholarships & Support

Apply before arrival

Japanese Government MEXT e³ scholarship

e³ is allocated an annual number of full-support scholarships for Master's and Doctoral students.

Amount: JPY145,000*/month for PhD students and JPY 144,000*/month for Master's students, tuition and admission fees are not collected, and travel expenses to Japan are supplied.

Admission: from October

How to apply: apply directly to the program

Application deadline: November 15th

Age restriction: applicants must be under 35 years of age as of April 1st of the enrolment year.

Japanese Government MEXT scholarship (Embassy recommendation)

You may also apply for another type of MEXT scholarship through a Japanese embassy. Different deadlines apply. For more details about this method, please consult your local Japanese embassy.

Top Global University scholarship

A limited number of full support scholarships for maximum period of 24 months are available. Apply directly to the program.

MEXT honors scholarship: reservation system

Scholarship of JPY 48,000*/month (for 6 to 12 months).

Apply directly to the program.

Other organizations' full support scholarships

Chinese Scholarship Council - please apply through the HU Beijing Office. AUN/SEED-Net (JICA) – scholarship for students from ASEAN countries. Contact JICA directly.

ABE initiative (JICA) – scholarship for young African professionals. Contact the JICA office in your country.

After arrival

MEXT honors scholarship (for enrolled students)

Financial assistance of JPY 48,000*/month (for 6 or 12 month) to encourage learning is available for a number of currently enrolled self-supported students with good academic performance.

*The amount of the government scholarships is subject to change.

Tuition fee support

Tuition fee waiver

Self-supporting graduate students can apply for waiver/discount of tuition fees. In the second semester of Academic Year 2012-13, 75% of the applicants were granted half-fee waiver and 19% one-quarter waiver.

Pay-back system for Doctoral Students

By combination of tuition fee waiver and research assistant employment, 100% of tuition fee can be provided for.

Academic fees	
Application fee	JPY 30,000
Entrance fee	JPY 282,000 (upon enrolment)
Tuition	JPY 267,900 per semester

*Subject to change **MEXT scholarship recipients are exempted from all the fees



Apply for short-term programs

Internship Program

The Faculty of Engineering offers an Internship Program for full-time students enrolled in foreign universities. More than 100 students joined the program in Academic Year 2014-15. Competitive scholarship are available for up to 2 months.

(JPY 80,000/month in academic year 2015-16)

This experience will surely benefit your future!

More details at:

<http://labs.eng.hokudai.ac.jp/office/iao/internship/>

Exchange Program

The Graduate School of Engineering welcomes international students from over 150 universities worldwide for one or two semesters as a tuition-waived exchange student. Two forms of exchange are possible:

- Special Research Students – graduate students who undertake research centered on their specialized areas
- Special Audit Students - take the same courses as regular students (graduate students take courses from e³ English curriculum). Please contact your study abroad office for further information about the application procedures.

Find-out if your university is our exchange partner:

<https://www.oia.hokudai.ac.jp/prospective-students/exchange-student-admissions/>

CHOOSE YOUR FIELD!



Each division offers Master's and Doctoral degree courses. Laboratories in the divisions are united in research groups with similar topics. Here you can check the key words of research areas for each group and pick your match.

Applied Physics

Striking advances in nanotechnology, materials science and ultrafast physics are being made regularly in the world today, often ushering in new physical processes. We are boldly riding this scientific wave of the 21st century to investigate phenomena with practical applications ranging from microscopic scales down to molecular and atomic scales.

4 Research groups

Quantum Matter Physics

Complex systems, networks, superconductors, topological materials, topological crystals, graphene, nanotubes, molecular junctions, quantum wells, semiconductors, low dimensional systems, quantum matter, charge density waves, acoustics, phonons, nanotechnology and microscopy, picosecond laser ultrasounds, optics, metamaterials

Complex Material Physics

Nanotechnology, imaging, graphene, neural networks, clathrates, hydrates, cell biology, soft matter, polymers, liquid crystals, colloids, emulsions, rheology, new materials, microstructure, solid state physics, crystals, quasicrystals, diffraction

Optical Science and Technology

Femtosecond, ultrafast, vortex, optical vortex, nanostructures, nanoscience, spin, spectroscopy, condensed matter physics, optical polarization, polarimetry, astronomical optics, extrasolar planets, interferometry

Solid State Physics and Engineering

Semiconductors, nanostructures, quantum computers, spin, interferometry, spectroscopy, crystals, lasers, condensed matter physics, waves, phonons, acoustics, NEMS, metamaterials

Materials Science and Engineering

The division provides professional education in cutting-edge materials science, including material design based on related modeling, material production methods spanning the scale from nano to macro application, ecological processes as environmental system, and ecological and energy materials serving as new functional materials. The division also supports the development of materials science researchers and engineers with the capacity to work independently.

4 Research groups

Ecological Materials

Electromagnetic and novel material processing, CO² decomposition, novel nanostructure fabrication, materials recycling by electrochemical process, fuel cell

Materials Design

Strength of ferrous and non-ferrous metals, dendrite growth, phase-field simulation, nanoparticle science for electronic Materials, inorganic-organic nanohybrid materials phase diagram

Energy Materials

High-temperature strength, oxidation resistance alloys and coating, structure materials for fusion reactor, hydrogen storage materials, computational approach, nano-cluster

Energy Conversion Materials

Integration of deterioration of material properties, new feature finding, combustion synthesis of nonstoichiometric compounds, design of new ironmaking system



Mechanical and Space Engineering

Students in this division take course subjects in space engineering and cutting-edge mechanical engineering. These subjects, along with research activities in a laboratory the student belongs to, support the development of capability of sound judgment based on problem identification and resolution ability, presentation skills to communicate their ideas, the capacity to independently promote research and technology development, a strong sense of ethics and an international perspective.

2 Research groups

Space Systems Engineering

Space system, space propulsion, spacecraft, hybrid rocket, thermal design, space utilization, International space station, combustion, computational fluid mechanics, aerodynamic design, multi-physics flow simulation

Materials and Fluid Mechanics

Fluid dynamics, two-phase flow dynamics, molecular fluid dynamics, interfacial transport phenomena, mechanical and functional materials, fatigue, surface modification, strength of materials, elasticity and plasticity, instability in solid mechanics

Human Mechanical Systems and Design

The division of human mechanical systems and design aims to conduct advanced research on "man-machine" systems that support new life and living by using bioengineering, robotics and control engineering, which are based on mechanical engineering, as well as offering specialized education related to these fields.

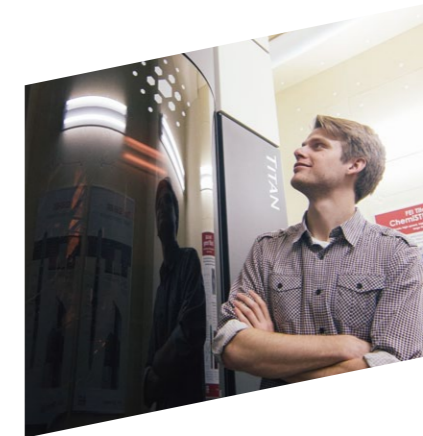
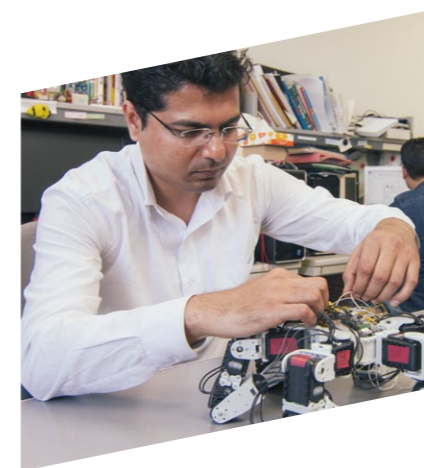
2 Research groups

Biomechanics and Robotics

Tissue biomechanics, human movement, medical engineering, assistive technology, motion and vibration control, robot navigation, mobile robot, smart structure, structural health monitoring

Micromechanical Systems

Fluid and solid mechanics, thermal conductivity, composites, functional material, stent, cell mechanics, MEMS, mechanobiology, optimization, static and dynamic analysis, kansei engineering



Energy and Environmental Systems

Our division is engaged in research and education on advanced energy systems through research on hydrogen fuel cells, next-generation engine systems, and innovative device for measurement and control of thermo-fluid phenomena, together with research and education on the evolution and development of future nuclear energy technologies including innovative nuclear systems, nuclear power plant safety, reactor physics, and radioactive waste management.

2 Research groups

Applied Energy Systems

Applied energy systems, energy conversion systems, flow control, applied thermal engineering engine system engineering, internal combustion engine

Nuclear and Environmental Systems

Nuclear and environmental systems, nuclear reactor, nuclear safety and system engineering, nuclear waste management, boiling heat transfer

Quantum Science and Engineering

The research activities of this division cover a wide area of physics and engineering for the quantum beam science and the plasma. Based on the fundamental study of these research fields, we are aiming for state-of-the-art materials characterization and fabrication techniques, medical-care and cancer therapy equipment, new devices for energy generation and saving, environmental monitoring technique, etc.

3 Research groups

Applied Quantum Beam Engineering

Neutron generation, neutron scattering / imaging, quantum beam, radiation detection / measurement, nuclear instrumentation, medical physics, proton therapy, neutron capture therapy

Plasma Science and Engineering

Plasma processing, plasma diagnostics, laser ablation, laser processing, plasma-surface Interactions, fusion engineering, vacuum engineering, simulation of electro-magnetic field in plasma

Nanomaterials Science

Quantum beam irradiation effects, in-situ observation, nuclear materials, transmission electron microscope, synchrotron radiation, surface science, well defined catalysis



My laboratory encourages students to be independent and to participate in international conferences by paying all travel and participation expenses. Last year, I went to two big international conferences in Europe to present my research results. It helped me to improve my own vision of the problem I am investigating. Also, I can discuss with my professors almost anytime, which helps tremendously with making corrections to my research plan.

Anisimova Margarita (Russia)
Master's student, Applied Physics



Engineering and Policy for Sustainable Environment

The Division of Engineering and Policy for Sustainable Environment aims to produce future leaders capable of solving complex environmental and social problems from global perspectives while building consensus with local residents and using methods including system-engineering and socioeconomic approaches. These are intended to create the spaces and environments essential for safe, comfortable and well-developed human activities and harmonization with nature.

2 Research groups

Engineering for Sustainable Infrastructure System

Structural mechanics, structural dynamics, bridge engineering, steel structures, concrete structures, hybrid structures, seismic engineering, life time engineering, life cycle management

Policy for Engineering and Environment

Infrastructure planning, national and regional planning, urban economics, transportation planning, traffic engineering, public involvement, mathematical programming, traffic information, construction management

Environmental Engineering

The Division of Environmental Engineering aims to produce highly specialized professionals with special capabilities essential to build sustainable social systems by conserving the environment and creating safe and comfortable living spaces based on the sound circulation and metabolism of water, air and substances. Such professionals should be furnished with the ability to engage in specialized work and R&D on environment.

2 Research groups

Water Metabolic System

Environmental biotechnology, biofilms, microbial ecology, public health, water quality standard, microsensor, fluoroionophore, lake Mashu, environmental risk engineering, innovative water treatment technology, drinking water guideline

Environmental Management Systems

Solid waste, landfill, thermal treatment, recycling, system optimization, air pollution, noise pollution, EIA, environmental health, sound material-cycle, bioenergy, soil and groundwater contamination, risk communication



Field Engineering for the Environment

This civil engineering division supports the development of engineers and researchers capable of formulating solutions to environmental and natural disaster issues that threaten human societies. Through a well-designed approach with world-class technologies offered by field surveys, wide-area measurement and assessment, experiments with sophisticated equipment and facilities, and numerical simulation, students will graduate with specialized knowledge and skill in related civil engineering subjects.

2 Research groups

Geotechnical and Material Engineering for Disaster Prevention

Cement, sustainability, concrete durability, mineral additives, soil mechanics, geotechnics, geodisaster, soil testing, geodynamics, foundations, numerical simulation, frost geotechnics

Hydraulic and Aquatic Environment Engineering

Environmental fluid mechanics, hydrometeorology, climate model, coastal hydrodynamics, coastal disaster, renewable energy, fluvial geomorphology, watershed hydrology, river management, turbulence



Human Environmental System

The human environment consists of the built environment and partly of the natural environment. The human environment, such as residence space, indoor climates, forests and cities, is important for our lives and symbiosis with nature. Building envelopes, building facilities, urban green spaces, city facilities and so on are systems designed to improve properties of the built environment. We carry out research concerning the performance of that environment and systems to heighten the quality level. We also verify the properties under actual service conditions.

2 Research groups

Planning and Performances for Built Environment

Building construction, building material, energy & environment

Building Science and Space Planning

Indoor environment, architectural environment, landscape



Architectural and Structural Design

We aim at fostering human resources who can put the new sophisticated policy and design for social safety-and-sustainability into practice based on acquired skills and field works related to safety mechanisms that support structural and urban spaces, by acquiring critical-thinking and problem-solving abilities on issues related to principles of symbiosis in the environmental spaces of buildings and cities and their design.

2 Research groups

Human Settlement Design

Design concept, modern architecture, documentation preservation, architectural planning, environment behavior, community design, disaster recovery and reconstruction, city planning, sustainable design, design simulations

Structural and Urban Safety Design

Steel structures, seismic protective systems, seismic isolation, seismic retrofit, OpenSees, seismic response analysis, seismic input estimation, vulnerability analysis, human behavioral monitoring, social economic impact analysis



Sustainable Resources Engineering

The main research and educational topics of our division is mining engineering including geology, rock mechanics, mineral processing, and extractive metallurgy. We also provide excellent opportunities to study environmental protection and remediation technologies, resources recycling of urban mine, and application of IT and biotechnology, which are needed for sustainable extraction and supply of mineral resources to our society.

2 Research groups

Geoenvironmental Engineering

Rock slope stability, tunnel deformation, acid mine drainage, environmental fluid mechanics, beachrock, biocatalyst, biogROUT, microbial fuel cell

Resources Engineering

Mineral processing, resources recycling, environmental mineralogy, water-rock interaction, ore deposit, inorganic material, soft matter, green chemistry, humic substances, CO2 conversion



Thanks to e³ program I can study in the country, which culture always fascinated me, in English. My research is related to the conservation efforts for heritage buildings in Malioboro Street, Yogyakarta, Indonesia. Applying Japan's successful experience in protecting their cultural heritage I hope to contribute to the improvement of the cultural heritage regulation in Indonesia. During the laboratory projects, team work is very important. At first it wasn't easy to adapt to my Japanese lab mates' working style and way of communication, but I could learn how to see things from a different perspective.

Safiera Nur Septirina (Indonesia)
Master's student,
Architectural and Structural Design



Campus Life

Enjoy the perfect balance between study, research and living environment!

Sapporo is the 5th largest city in Japan, with a population of almost 2 million people, and it is often rated as one of the most desirable places to live in Japan. The Hokkaido University campus is located in a beautiful setting in the center of Sapporo, with easy access from the international airport. Enjoy the plentiful nature of Hokkaido, including skiing, hiking, and many other outdoor activities!



AN UNFORGETTABLE EXPERIENCE!



Where to stay?

University Accommodation

There are a total of 642 fully furnished, Internet-enabled rooms (including 60 for family and couples) available. Most students stay in the dormitory for the first semester or two.

Private Apartments

Room guide service is available on campus for free. Many affordable private apartments are located in close proximity to the campus.

How much will I spend?

Sapporo provides an excellent quality of life and a more reasonable cost of living compared with other major cities in Japan. You can comfortably live on a budget of approximately JPY 90,000 to 100,000 per month*.

Rent	University accommodation	JPY 4,700 to 28,500
	Private apartment	JPY 30,000 to 40,000
Food		JPY 15,000 to 30,000
Other		JPY 20,000 to 30,000

*As of May 2015. Your budget depends on the lifestyle you choose. The amount is for reference only.

Who will help?

e³ Office & International Affairs Office of Engineering

Friendly English speaking staff will help you with any issues, from academic affairs to everyday life.

Supporter System

Newly arrived international students are paired up with an enrolled student and are given help to smoothly adjust to their new environment.

Will I learn Japanese?

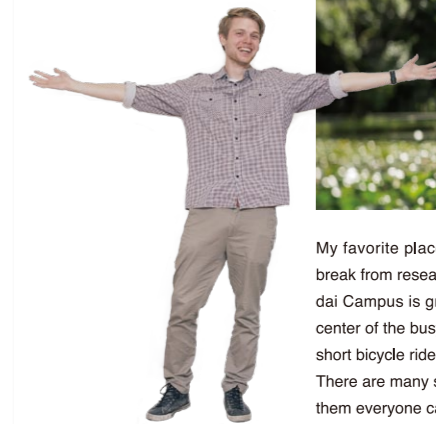
International Student Center

Learning some Japanese will help you to enjoy your every day life and better understand Japan's unique culture. Courses of different levels, from introductory to advanced, are offered for free.



Ask Students!

David Cempel (Czech Republic)
Doctoral student, Materials Science and Engineering

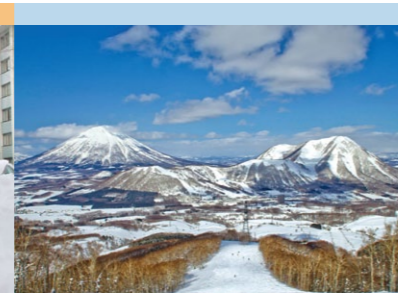


My favorite place on campus is Ohno Pond where I like to take a break from research and relax on the bench with some music. Hokkaido Campus is green, quiet and wide, while located just right in the center of the busy city! Everything you may need is just in a reach of short bicycle ride or walk!
There are many sport clubs in the university, but even without joining them everyone can enjoy jogging on campus.

Ma Yan (China)
Master's student, Field Engineering for the Environment



Besides having classes and doing research, the campus life is very colorful, like field trips, parties, culture salon. The best is that e³ and Hokkaido University provides many chances for international students to communicate with each other and experience culture of different countries.
I really enjoy living and studying here.



ACADEMIC CALENDAR / EVENTS

October

Classes begin

November

December

New Year's Break

January

February

Classes finish by early February

March

Graduation ceremony

April

Classes begin

May

Golden week holidays

June

University Festival

July

August

Classes finish by early August

September

Graduation Ceremony

■ Orientation ■ Welcome trip

■ Year-end party "bonenkai" ■ Snow sculpture contest ■ Graduation party

■ Orientation ■ Welcome party ■ Hanami BBQ

■ Sports festival ■ Field trip ■ Graduation party

★ October enrolment

Autumn semester: October-March

★ April enrolment

Spring semester: April-September

ACCESS to Hokkaido University!

From New Chitose Airport to Sapporo Station: 40 minutes by express train or 50 minutes by bus/car
From Sapporo Station to campus: 10 minutes by walk or 3 minutes by car

English Engineering Education PROGRAM

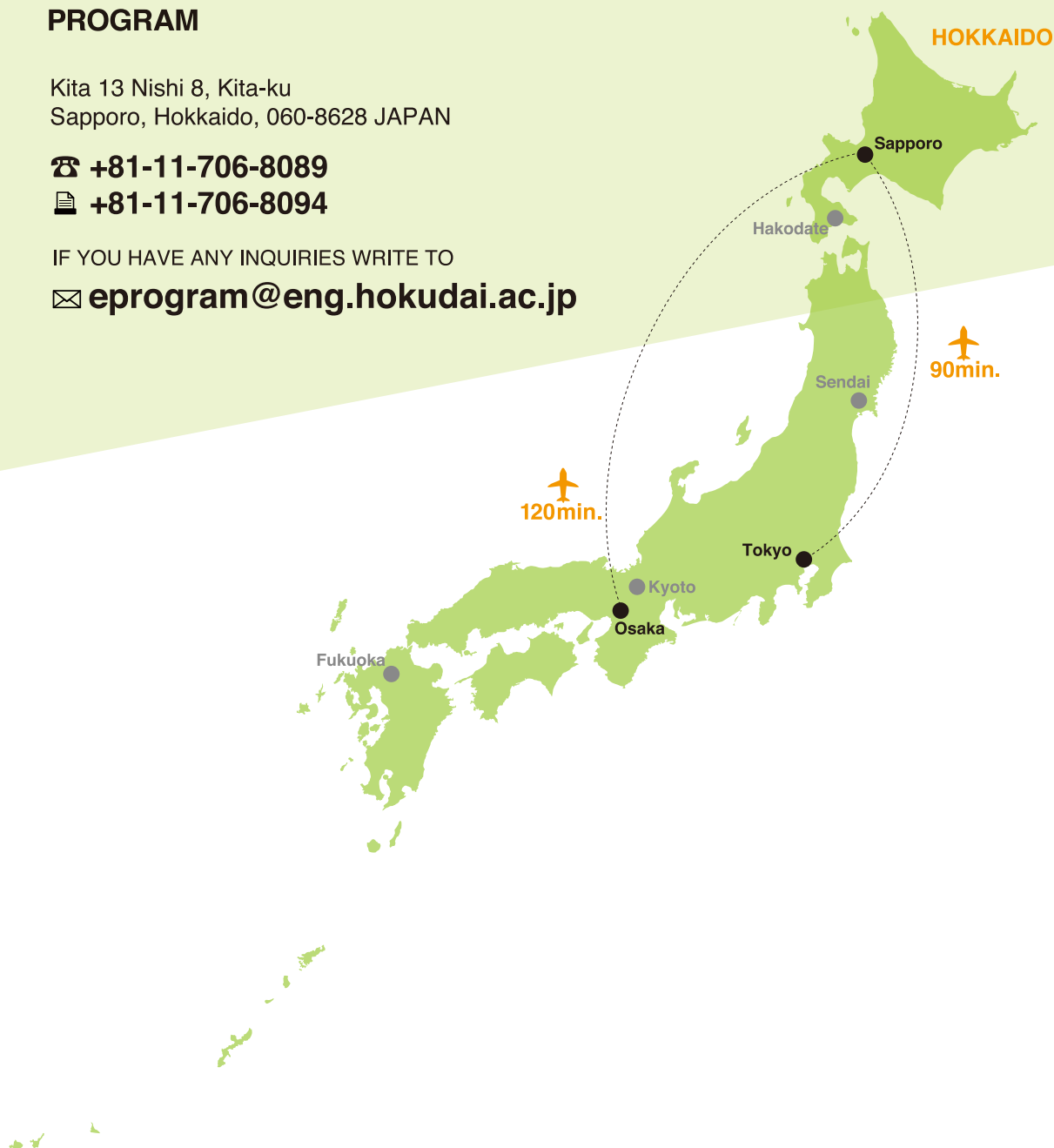
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