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- Veterinary Medicine Leading Program

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Hokkaido University Ambitious Leader's Program

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as of September, 2014

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For more information about applying to our program, check the website. **http://ambitious-lp.sci.hokudai.ac.jp/en/**

HOKKAIDO UNIVERSITY

HOKKAIDO UNIVERSITY
AMBITIOUS LEADER'S PROGRAM

Fostering Future Leaders to Open New Frontiers in Materials Science

Open up the world through materials science. To Ph.D.s active in the world of industry

HOKKAIDO UNIVERSITY *Ambitious* LEADER'S PROGRAM

Fostering Future Leaders
to Open New Frontiers in Materials Science

Future global leaders nurtured by the frontiers of knowledge

Humanity is currently facing various problems the like of which we have never experienced before, such as depletion of energy resources, disasters and disease epidemics on a global scale. There is no doubt that materials science, which has chemistry, life sciences, and chemistry and materials technology as their foundation, will be the field to solve these problems the world faces.

In the "Hokkaido University Ambitious Leader's Program Fostering Future Leaders to Open New Frontiers in Materials Science", which was launched with the support of the Ministry of Education, Culture, Sports, Science and Technology(MEXT), through a combined curriculum of the five years in a graduate school doctoral course. Students study the fundamentals and application of material science in a cross-disciplinary setting. Focusing on chemistry, we help the students acquire the wide range of skills necessary to become leaders and be active internationally after completing their degree, and starting work in the private enterprise.

Since the foundation of Sapporo Agricultural College in 1876, the frontier spirit has been an important part of the philosophy of Hokkaido University. We welcome students who take on the challenge of global issues, with strong determination and a frontier spirit, aiming to be leaders in the new age.

Ambitious Leaders in Industry

New-generation human resources with high ethics and comprehensive vision who explore the frontiers of materials science without fear of risk.

Universities or research institutes

Doctoral course

Research

JSPS Research Fellowships for Young Scientists

Leadership Training
Study of Specialized Subjects
+
Career path support
Financial support

HOKKAIDO UNIVERSITY
AMBITIOUS
LEADER'S PROGRAM
Fostering Future Leaders to
Open New Frontiers in Materials Science

Master's course

Industry

Program Selection Examination

(First semester of First year) 20 people / year

- Life Science, Graduate School of **Life Science**
- Environmental Materials Science, Graduate School of **Environmental Science**
- Graduate School of **Chemical Sciences and Engineering**
- Mathematics, Graduate School of **Science**
- Quantum Science and Engineering, Graduate School of **Engineering**

Master's Course Entrance Examination

Fostering doctors who can be immediately effective even in fields other than research

This program targets students majoring in the following at Hokkaido University Graduate School: "Division of Chemical Sciences and Engineering at the Graduate School of Chemical Sciences and Engineering", "Division of Life Science at the Graduate School of Life Science", "Division of Environmental Materials Science at the Graduate School of Environmental Science", "Division of Mathematics at the Graduate School of Science" and "Division of Quantum Science and Engineering at the Graduate School of Engineering". After taking a screening test Program Selection Examination during the first year of the master's program in summer, students will study a five-year integrated education and research curriculum, while receiving the advice from main and assistant supervisors and mentors. Economic assistance of 150,000 to 200,000 yen per month, as well as employment support in cooperation with companies, is available.

A strong student-support system unique to this leading program

Economic assistance

Economic assistance will be provided from the first year of the course so that the program students can go to the doctoral program without economic worries and can concentrate on their studies and research, Also, if necessary, the following costs will be subsidized: international conference fees and travel expenses, travel and living expenses related to domestic and overseas internships, and costs required for course participation.

Payments: 150,000 to 200,000 yen monthly

※In cases where you have received other scholarships or will receive other scholarships, the amount of this subsidy may be reduced.
※Please participate in the program with awareness and responsibility as beneficiaries.
The support might be terminated depending on such things as the results of your academic performance and oral examination in the debriefing session.

Career Path Support

We will create opportunities for joint research and internships with companies as needed, in addition to students' regular company visits and interviews with personnel managers and company researchers. We will support your employment in various fields of industry, academia and government after students complete the doctoral program.

Companies that collaborate with the program

Hitachi / Teijin / Fuji Electric Systems / Toshiba
Nippon Steel & Sumitomo Metal / JFE Steel / Bridgestone
Showa Denko / ADEKA / Kyowa Hakko Bio

Green campus brings you top level academic experience in central Sapporo

Hokkaido University boasts the largest number of faculties covering almost all areas of the humanities and social and natural sciences of the national universities in Japan. We have domestically and globally leading research fields. Education and research have been conducted uniquely in the university through the integration of humanities and sciences and cross-disciplinary cooperation. One of the attractive aspects of Hokkaido University is its large campus full of greenery and within walking distance of JR Sapporo Station. While enjoying the nature of the four seasons, you can concentrate on your study and research. We also have good facilities, including a comprehensive museum that passes down the history of 130 years of research. The neighborhood in the vicinity of the university has been developed as a student town, so you can enjoy a comfortable student life.

Graduate school of
Chemical Sciences and Engineering

This graduate school is only one course in Japan to educate widely all research area of Chemistry. The challenging curriculum is planed by the long tradition of chemistry education that was the Cradle of Dr. Akira Suzuki, Nobel Prize Chemist. Our educational philosophy is based on the four pillars of principles – "a frontier spirit", "holistic education", "global perspectives" and "practical learning" – that have been pursued by our university since its early days in 1870s as Sapporo Agricultural College.
http://www.cse.hokudai.ac.jp/

Memorial Lecture Hall celebrating Dr. Akira SUZUKI, Nobel Prize Chemist is located in this new building constructed in June 2014.

Life Science, Graduate school of
Life Science

The division has three courses, these are "Transdisciplinary Life Science", "Biosystem Science", "Biomedical and Pharmaceutical Science". Our main objective is to foster students with multi-disciplinary views beyond the conventional boundaries of life sciences.
http://www.lfsci.hokudai.ac.jp/en/

Environmental Materials Science, Graduate School of
Environmental Science

Comprehensive chemistry-based research and understanding of the natural environment are essential to resolve environmental pollution and destruction. We conducts cutting-edge research and education on chemical substances involved in the problems.
http://www.ees.hokudai.ac.jp/division/material/

Mathematics, Graduate School of
Science

The sciences are always hungry for new mathematics in various fields. Conversely, breakthroughs in mathematics itself contribute to other scientific disciplines. We preserves this spirit, covering a various research areas including Mathematical Sciences.
http://www.math.sci.hokudai.ac.jp/en/

Quantum Science and Engineering, Graduate School of
Engineering

The division cover a wide area of physics and engineering for the quantum beam, and the fusion plasma. These fields include radiation sources, fusion plasma devices, physical-chemical interaction of radiation, and application of high energy accelerators.
http://www.eng.hokudai.ac.jp/edu/div/quaneng/english/

OUTLINE

Advanced integrated education program

Program students will be able to take lectures in a wide range of fields provided by the institutions and organizations we cooperate with. Throughout the curriculum, we set up many opportunities for exchanging opinions with researchers in different fields as well as conducting joint research and receiving technical guidance in the process. We are nurturing experts with cross-disciplinary knowledge and ideas.

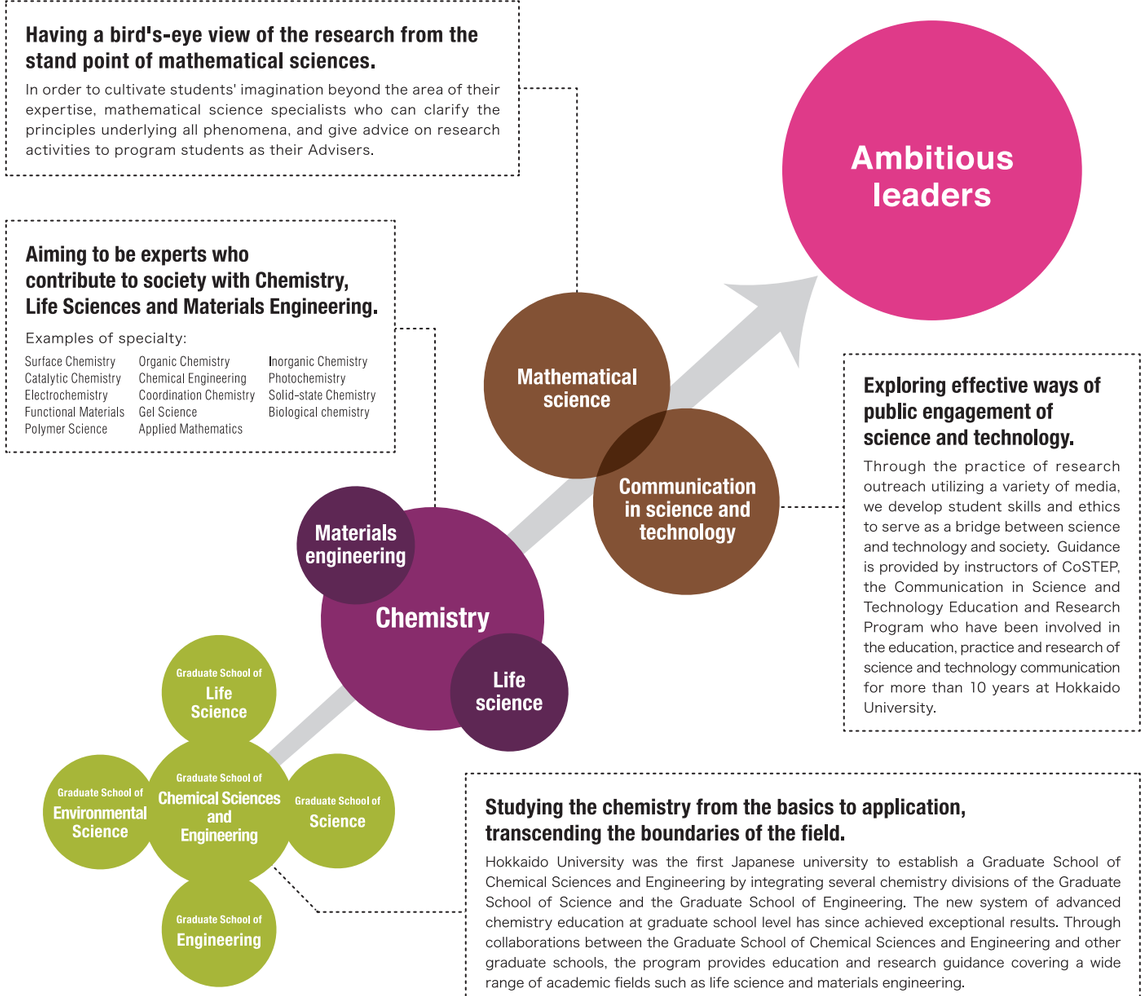
Having a bird's-eye view of the research from the stand point of mathematical sciences.

In order to cultivate students' imagination beyond the area of their expertise, mathematical science specialists who can clarify the principles underlying all phenomena, and give advice on research activities to program students as their Advisers.

Aiming to be experts who contribute to society with Chemistry, Life Sciences and Materials Engineering.

Examples of specialty:

Surface Chemistry	Organic Chemistry	Inorganic Chemistry
Catalytic Chemistry	Chemical Engineering	Photochemistry
Electrochemistry	Coordination Chemistry	Solid-state Chemistry
Functional Materials	Gel Science	Biological chemistry
Polymer Science	Applied Mathematics	



Exploring effective ways of public engagement of science and technology.

Through the practice of research outreach utilizing a variety of media, we develop student skills and ethics to serve as a bridge between science and technology and society. Guidance is provided by instructors of CoSTEP, the Communication in Science and Technology Education and Research Program who have been involved in the education, practice and research of science and technology communication for more than 10 years at Hokkaido University.

Studying the chemistry from the basics to application, transcending the boundaries of the field.

Hokkaido University was the first Japanese university to establish a Graduate School of Chemical Sciences and Engineering by integrating several chemistry divisions of the Graduate School of Science and the Graduate School of Engineering. The new system of advanced chemistry education at graduate school level has since achieved exceptional results. Through collaborations between the Graduate School of Chemical Sciences and Engineering and other graduate schools, the program provides education and research guidance covering a wide range of academic fields such as life science and materials engineering.

Pilot student joined in SY2013
Graduate School of Chemical Sciences and Engineering

Yao Zhang
China

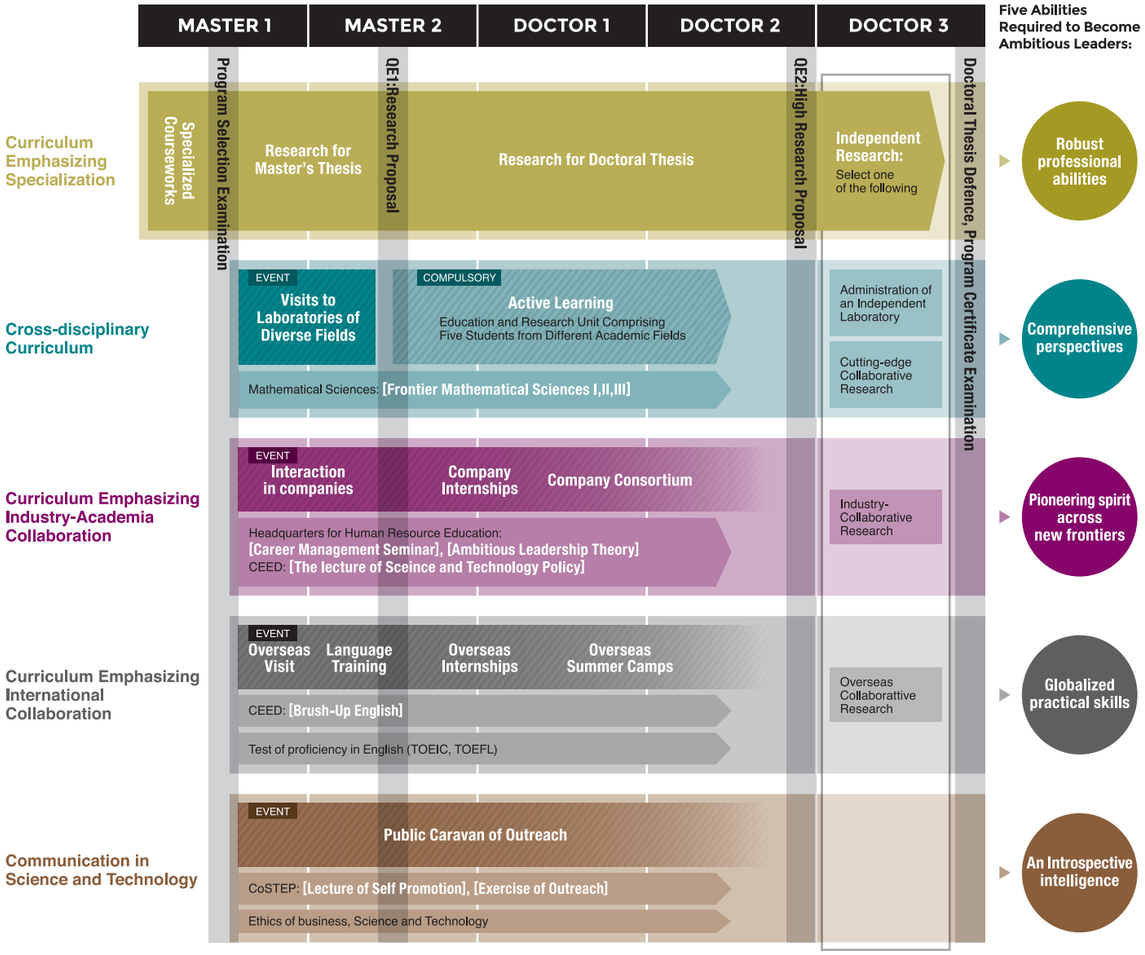
Grow up through challenges

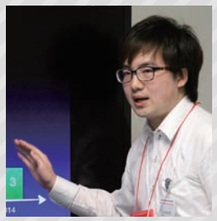
At the very first time I learned about this program, I was extremely hesitant because it seemed like an impossible mission even for a Japanese student. But now that I have arrived at a foreign country with my ambition and dream, why don't I give myself a chance? It is indeed a big challenge but it also could be a valuable opportunity on the way to growth. Fortunately, I was selected as a pilot student to have chances learning from other pilot students and instructors from diverse fields. During my time in this program, I participated in the enterprise information session, technology mathematics and communication courses, international symposiums, and took a qualifying examination. Looking back, this program helps me to be an all-round student and improves my Japanese level. Above all, I realized that no advance is to drop back like 'rowing upstream' because other pilot students are so excellent that I don't want to be left behind. As long as I want to go forward, our supervisors are sparing no effort in helping me grow. All in all, although being a pilot in this program is hard it is the best move I have ever made.

CURRICULUM

The way has been paved for you to become a global leader through dedicated effort.

The curriculum is jointly administered by Hokkaido University's Graduate School of Chemical Sciences and Engineering, Graduate School of Life Science, Graduate School of Science, Graduate School of Engineering, Graduate School of Environmental Science, and Research Center for Integrative Mathematics.
We have implemented cross-disciplinary education and research in cooperation with other institutions including six on-campus research institutions and centers, as well as off-campus research institutions. Furthermore, we will foster global leaders with the powerful back-up of the following groups: The Communication in Science and Technology Education and Research Program (CoSTEP), Center for Engineering Education Development (CEED), Human Resource Development Headquarters, and Frontier Chemistry Center (FCC)





Pilot student joined in SY2013
Graduate School of Environmental Science

Mingzhe Zhang
China

A great chance that changed my life

I felt that my life needed more challenges, so, in order to do so, I decided to study at the highest level possible, and, of course, Japan is one of the best choices in the world. To pursue my dream, I learned a new language, moved from my hometown and changed from my Computer Sciences background to Material Sciences, an exciting new field to me. When I heard about the "Ambitious Leaders" program and participated in the briefing meetings and presentations, I was very much impressed with the possibilities of growing academically, professionally and personally. The possibility of collaborating with other great researchers from different fields, making friends and the chance to become a future leader is what made me decide and apply for the "Ambitious Leaders" program. I am honored that after the steps and rigorous screenings I had to overcome, I was one of the lucky selected members, and, now I am happy, proud, working hard and engaged in all the activities the program offers.This program has changed my life, forever. I strongly recommend everyone to change the life too by applying to this program.

Pilot students activities in SY2013

We accepted 11 pilot students in January of 2013 for the first year program. From 2014 on, we will accept program students in October. The pilot students started three months later than the future regular students. We will introduce the first year activities of the pilot students whose aim is to become global leaders utilizing the five-year curriculum, something that also serves as a means of developing the program.

The leading program's kickoff event

An international symposium was held in Hokkaido University

The 1st International Symposium, which marks the start of the seven-year leading program, was held on March 7, 2014. International education program personnel including Professor Katz from University of California, Berkeley, Professor Chen from National Taiwan University, and Professor Wang from Peking University, came to our symposium and gave lectures, along with other domestic program personnel. In addition, executives from the university's industry cooperation program also participated. At the poster session, they confirmed the progress of the research of the 11 pilot students. They also checked various results from Hokkaido University's chemistry department, which supports the backbone of the research. The concerned parties shared their opinions on the advantages and disadvantages of the program. The kickoff event was meaningful in that it also helped to prepare for future students of the program. On the following day, March 8, 2014, the seminar "Beyond the boundaries of fantasy and knowledge, pictogram science which stimulates the world" was co-hosted by Hokkaido University CoSTEP in order to kick-start science and technology communication education. It helped us to understand the diversity of techniques used to explain science to people.

In order to actively check research from a variety of fields, five related fields of study were included in the poster session.

Overseas program personnel also participated. We examined the research of various fields in English.

Overseas Visit

In addition to our researching, we also need to reach out to the public.

AAAS (American Association for the Advancement of Science), Annual General Meeting in 2014

T.R., Pilot student, Graduate school of life science

We visited the annual meeting of the AAAS (American Association for the Advancement of Science), the publisher of prestigious science journal "Science" in February 2014, in Illinois, USA. To our surprise, there were exhibitors from more than 50 countries, and it served as a major hub for scientific communication. There was a Japan booth collaborated by Hokkaido University, RIKEN, JST, WP and others. Many companies, such as Fuji Heavy Industries, also ran booths. There are many opportunities for exchanging information between researchers and the general public in the United States. There are also opportunities for the researchers to know the average person's real and up-to-date opinions regarding what the market is seeking. It was a good experience for us to know the difference in industry-academia-government collaboration between Japan and the US.

International Network Making

Visiting a famous Institute in the East Coast of the United States

US National Institutes of Health and Memorial Sloan-Kettering Cancer Center

T.Y., Pilot student, Graduate school of chemical sciences and engineering

We went to the East Coast of the United States in March 2014. We visited the National Cancer Institute and the National Institute of Child Health and Human Development in the National Institutes of Health (NIH). We also visited the Memorial Sloan-Kettering Cancer Center (MSKCC). It was a productive trip because we were able to witness the advanced overseas research. I was given a chance to give a presentation about my research in English at the NIH, which was a valuable experience. In the MSKCC, one of the world's leading cancer specialist hospitals, we were able to have high-level discussions, for example discussions regarding the usage of specimens to conduct a staining process on histological breast cancer. During the visit, we had a chance to visit a research center even though we didn't have a reservation, thanks to an introduction. Thus, we felt that we were able to successfully expand our overseas network.

Visits to Laboratories of Diverse Fields

The essence of biological pharmaceutical technology

Learning genetic engineering

M.Z., Pilot student, Graduate school of environmental science

Compound synthesis in microbial bodies has been attracting attention as the next generation of pharmaceutical technology with low environmental impact. Since I am from the field of chemistry, I attended an applied biological chemistry lab for two weeks in order to understand this technology. Although it was outside my expertise, I took on the challenge to elucidate the mechanism of biosynthesis of enzyme inhibitors, which has not been successfully elucidated by anyone yet. I had a limited period of time, so I was not able to elucidate it; however, I was able to put textbook knowledge into practice, including axenic culture of objective bacterium, aseptic technique, genomic DNA purification and PCR. I also learned some of the methods and ways of thinking of biological experts. I was also able to understand the principle of optical microscopes, LC / ESI-MS, DNA spectrometers and PCR equipment. Thanks to this lab visit, I was able to greatly expand my views on the diversity of research.

Training in Japan

Thoughts on how leaders change with the times

Kyoto University Leading Program / Shishukan Symposium

K.C., Pilot student, Graduate school of chemical sciences and engineering

I took part in the "Messages to the leaders responsible for the next generation" event sponsored by Kyoto University's Leading Program on February 19, 2014. I listened to lectures by Professor Kellerman who is teaching Leadership Theory at Harvard University, and by other company representatives, and I thought about the image of a leader in the 21st century. Leaders in the old days were dominant and tried to move people with force; however, modern people could unite and hold out against such leaders. Our concepts of leaders are not constant. These days, people require leaders who are considerate to their followers. It gave me a chance to think deeply about what kind of ambitious leader I should become.