Recently the social environment has been changing on a global scale. Human beings are facing numerous challenges such as economic downturns and environmental issues. Under these circumstances, excellent human resources are indispensable in solving global challenges for future generations. Unfortunately, opportunities for doctoral degree holders with a high level of specialization are limited, which is an intellectual loss for Japan.

The Program for Leading Graduate Schools (Leading Program in short) supported by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) aims to enhance the development of doctoral degree holders. This program is designed to foster students to become leaders who have high levels of specialization, are able to scrutinize society from a broad perspective, and who will play active roles globally, in the industrial, academic and governmental sectors.

Cultivating “courageous intellectuals” is a key philosophy in Nagoya University’s Academic Charter, which also aims to nurture students into well-educated persons who have expertise and a strong desire to contribute widely to society and to humanity, while fostering communication skills and the ability to address issues from a broad perspective. This concept of “courageous intellectuals” is the same as the concept of this Leading Program. We will continue making efforts to foster doctoral degree holders in future by strengthening both education and research.

At present, Nagoya University has the following six Leading Programs: Integrative Graduate Education and Research Program in Green Natural Sciences, Cross-Border Legal Institution Design, PhD Professional: Gateway to Success in Frontier Asia, Leadership Development Program for Space Exploration and Research, Graduate Program for Real-World Data Circulation Leaders, and Women Leaders Program to Promote “Well-being” in Asia. Each program's purpose, respectively, is to contribute to the environment, promote international collaboration in the field of law, foster leaders to play an active role in society, develop the space sciences, contribute to the information society, and, realize gender equality in society. Nagoya University aims to foster global leaders in these various fields. In order to further enhance these six Leading Programs, the Organization for the Promotion of Leading Graduate Schools was established to develop various curricula across the fields under the common philosophy of strengthening the cultivation of doctoral degree holders.

With much effort, the groundwork is now in place to accept talented doctoral degree holders from the Program for Leading Graduate Schools. We will continue to move forward as a “knowledge hub” in order to make a lasting academic contribution to society.

Seiichi MATSUO
President
Nagoya University
Cultivating Next-generation Leaders Using a Trans-disciplinary Approach

Systematic education to nurture global leaders

The Leading Program is a five-year complementary program for students pursuing combined masters and doctoral degree courses, and extends beyond disciplinary boundaries. The trans-disciplinary curriculum of the program distinguishes it from the conventional graduate schools. Our six programs share an integrated curriculum that combines different disciplines. Through a phased and systematic approach involving nurturing of creative and critical thinking skills, problem solving skills, and leadership skills, students are able to acquire the necessary capabilities to become global leaders. In addition, common subjects and open courses are arranged among the six programs to foster globalized thinking on current issues and prospects.

Practical Curriculum to Broaden Worldview

Domestic and overseas training and fieldwork

To foster practical knowledge and abilities, which cannot be acquired through lectures and research at university alone, a variety of training courses, such as research internships, overseas training and overseas field research are implemented. Through such activities, the worldview of students is broadened. Especially, as overseas training outside Japan is a unique opportunity to experience diverse cultures and values. By working together through friendly competition, students acquire international communication skills, explore issues from a global perspective, and acquire the ability to solve those issues.

Supporting Students’ Future Goals

Network covering a variety of fields

By making use of the industry-academia-government network of Nagoya University, which has many Nobel laureates and top leaders in industry, we have built a system to support students’ academic goals.
Aiming to foster global leaders who have not only knowledge, and/or practical skills, but also the ability to think outside the box from a global perspective

A Unique Program to Promote an Innovative Graduate School Education

**Maeshima:** The Program for Leading Graduate Schools started in 2011 around the same time as the devastating Great East Japan Earthquake. The program is now in its fifth year. Historically, Japanese graduate schools have been considered as training institutions for university positions. But it is often said that a doctoral degree is like “a grain of rice stuck on your sole” meaning that you cannot make a living with it since obtaining a doctoral degree does not guarantee a position. However, this situation is not just unique to Japan but also exists throughout the world. For example, in France, even if one graduates from a graduate school, one cannot enter the faculty at a French university without studying abroad. Likewise, in South Korea, most doctoral candidates need to study in the United States of America or Europe and have to excel, otherwise they cannot be welcomed back in their home country. The Ministry of Education, Culture, Sports, Science and Technology proposed the Leading Program in order to change situations like this and make new reforms to alter the educational system. Six programs were adopted at Nagoya University, to start this unique graduate school education. Today, one student from each of the six programs will participate in this talk. I would like to hear the current situation, achievements, and desires for the future from each student.

**Reasons Why We Applied for the Leading Program**

**Nagae:** My reason was “the program looked interesting.” I had planned to study for a doctoral degree, but I wanted to study something new in order to deepen my knowledge. Then, I found out about the Leading Program through a recruitment session, and decided to join the program.

**Hanaoka:** The study theme of my laboratory is infrared astronomy. Because we are promoting development of observation equipment to be installed on the next generation satellite, I wanted to study more about satellites and therefore decided to enroll in the program. In addition, since I was not so confident using English, I felt the Leading Program, which uses English, would give me an opportunity to improve my English ability.

**Sato:** I was interested in Asian economy before entering the Leading Program. The target area of my program, namely, PhD Professional: Gateway to Success in Frontier Asia, is “Frontier Asia.” Having the opportunity to train overseas was invaluable to me.

**Tsui:** I worked as a nurse after I graduated from Nagoya University, but while I worked in this profession, I came to feel that I wanted to deepen knowledge to hold a leadership position so I entered graduate school. Thereafter, I came to learn about the Leading Program called “Women Leaders Program to Promote Well-being in Asia.” I became interested in medical issues not only in Japan but also in other countries. I thought, for example, how my work could be helpful in other Asian countries, and how community medical care in other countries could broaden my horizons.

**Nakazawa:** I came to Nagoya University for the first time when I took the graduate school entrance examination. I was attracted to international exchange activities at the university, and was excited that students could get positive support when making presentations in foreign countries and when developing their career path. Therefore, I decided to apply for the program.

**Nandasiri:** I graduated from Colombo University in Sri Lanka and after receiving my law credentials, I decided to study in Japan. My home country of Sri Lanka was in a state of civil war until 2009, and afterwards we were able to finally concentrate on development. Japan is a country with similar experiences. Its development after the Second World War is miraculous. I decided to study in Japan and in this program because I hope I will take back what I learn about the Japanese development experience and apply it in my home country.
Improving International Communication Skills in Order to Play an Active Role in the World

Maeshima: It is necessary for global leaders to have language and communication skills, as to express their own opinions on an international stage. How does everyone strive to improve their language skills?

Nagae: It is difficult to acquire a foreign language. I can make daily conversations, but it is still difficult if I need to express my opinion logically during discussions. All the lectures offered in my program are taught in English, and I think the same applies to the other Leading Programs. The other day, I participated in my program’s event at the Istanbul Technical University and had discussions in English with Turkish students. Since the program uses English all the time, the environment is very conducive for me to acquire English.

Nandasiri: I studied Japanese before coming to Japan, but Japanese is difficult to acquire. I have learned Japanese by listening to conversations, watching movies, and singing songs by myself. Japanese has Kanji, Hiragana, and Katakana, and it is hard to learn all of them. I envy Chinese students because they can already use Kanji.

Maeshima: I am impressed that you could learn Japanese very well in a short period of time.

Hanaka: English was really my weak point when I entered the program. I could not speak English at all. Since my English grammar was not good, my writing skills were poor. However, after I entered the Leading Program, I have had opportunities to talk with native English teachers and have discussions in English with foreign students. Through this experience, my English ability is gradually improving. I attended a one month overseas English training course in Malaysia this January, and I had to speak only in English from morning to evening. I am still not good at English, but it was a very valuable experience for me to improve my English skills.

Tsuji: I had not used English for six years until I entered graduate school after receiving a bachelor’s degree. Even after I entered, there were not many opportunities to use English, except when I read publications for my studies in nursing science. However, after I joined in the Leading Program, I had to speak English. It was hard to get used to this situation. Eventually, I started to think I wanted to understand properly the English lectures by leaders who were playing active roles on the international stage, and also wanted to ask questions to them. Those kinds of feelings, I guess, made me want to improve my English.

Nakashima: I have been given opportunities to make presentations at international conferences, and discuss with foreign researchers. I feel this has been a good learning experience. As for the English training courses in the program “Integrative Graduate Education and Research Program in Green Natural Sciences,” there are two kinds of courses. Both are 90 minutes’ courses, held once a week. One is discussing in a group with a small number of people, and the other is for preparing for the TOEIC test. Students can choose a course based on their own preferences. Because of these classes, I can brush up on my English and native English teachers teach us cordially. Now I have gotten into the habit of using English in my daily life.

Maeshima: I could understand that all of you are struggling every day to be able to manage English. However, it does not mean that all is well just because you have a good English language skill. Rather, it is important to have it be cause you cannot express your field of specialization and character if you cannot communicate in English. Because it is very important to learn when you are young, please develop your English skills more and more.

Learning with Colleagues Having the Same Aspirations, Beyond Nationalities and Languages

Sato: Many students from various graduate schools and countries belong to the Leading Program and I think it is very interesting because every student has different personalities. People of the same generation as I, whom I met during my visit to developing Asian countries, have bright expectations about the future and are very lively. On the other hand, Japanese students tend to be more reserved in comparison.

Nandasiri: The environment at a Sri Lankan university or law school is totally different from that at a Japanese university. Many Japanese seem to be shy at talking with foreigners, but many students of the Leading Program talk actively. As everybody said, students who want to become leaders seem to be good at English and know how to communicate with foreigners.

Nagae: Our Leading Program has students with different nationalities such as China, Ecuador, South Korea and Syria. Under this diverse environment, there are cultural differences among students. However, I have learned not to judge from nationalities, but to understand that we are all human beings and friends at the Leading Program. While foreign students are good at talking themselves up, many Japanese are shy. We Japanese should follow their lead.

Nakazawa: When I attend international conferences in physics, which is my field of specialization, I see everyone speak very eloquently. I do not feel any difference between Japanese and non-Japanese.

Hanaka: I agree. I have also felt a gap in culture or nationalities. Of course, there are foreign students in my Leading Program, but everyone has an interest in satellites, and we are all advancing to the same goal. There might be a difference with languages between English and Japanese but I have not felt any gaps from it.

Maeshima: After all, it is good when you are young. Failure is forgiven if you are a student and even if you disagree you have a chance to quickly reconcile. This is the time to gain various experiences because the possibilities are endless.

Tsui: As for me, I felt the difference in custom, coming from culture and history in the overseas training. Even for countries in Asia, the way of thinking about nursing and childcare is totally different. When I asked overseas students whom I met through this program, “who cares for elderly parents and young children?” I realized each country has its own way of thinking about community medicine and roles of women in the home. I think I cannot understand the system itself even if I learn all about it, unless I know the underlining way of thinking of the system. I think I can deepen my understanding of medical systems, by talking and hearing from the people themselves.

Nandasiri: Living in Japan, I notice that some aspects of Japan are different from Sri Lanka, but there are also many similarities because both are Buddhist countries. In the end, it is important to experience the culture as well as learn in the classroom.
Diverse Experience Widens Possibilities and Brings New Visions for the Future

Maeshima: The curriculum of the Leading Program is diverse and demanding. In such a program, what did all of you learn and/or change?

Sato: What is good with the Leading Program is that I have learned how to be confident. When I went to Laos, Cambodia, and Thailand for the overseas training, I found that I have already learned more than I thought and I could talk about my specialization in detail. This experience made me have confidence in myself. In addition, it was good that I could receive quick feedback from my professors.

Maeshima: It is good to hear that in your graduate school life, you have realized that you could communicate about your field of specialization to society and develop a detailed action plan. This is one of the objectives of the Leading Program.

Hanaoka: I received financial support for overseas training, and lived in a foreign country by myself for study. Joining the Leading Program brought these valuable experiences. I want to keep challenging myself. In our program, I have an opportunity in planning an ideal satellite with my team members. It is such fun to think about what type of satellites we can build and how it functions, which allows us the experience of starting from scratch.

Nandasiri: This summer, I am going to visit researchers of the University of Cambridge in the UK to do research and interview. I am very thankful because this is possible only because of the Leading Program.

Maeshima: Since participating in the program, is there anything that has impressed you?

Nakazawa: I went for overseas training at a conference in the United States of America, since I had eight minutes for presentation and four minutes for questions and answers, I had to summarize my research logically in a limited time frame and prepare to answer questions. This experience helped improve my English skill. Incidentally, the manuscript I prepared for questions and answers was not useful at all. I had to think and give answers in English correctly impromptu. I thought this was a good experience.

Tsui: Students from four graduate schools were in my team in an overseas training program in Vietnam and I learned various features of the other students’ graduate schools and thoughts about ‘well-being’ at that time. We went to local hospitals, visited women leaders and inspected farmlands, but even though we saw the same thing, our viewpoints were totally different, depending on our backgrounds and discipline. If I did not participate in this program, I would not have known about agriculture fields. I strongly felt that agriculture is deeply associated with healthcare, which is my field of specialization. Now the task is to answer the question “how will we develop our healthcare research in the future?”

Maeshima: The multidirectional approach to health is important because it is the basis of a healthy life in society.

Nandasiri: The development of only one field such as law or science is not enough to make a better society. We should draw on various sectors together.

Envision Yourself as a Future Leader, and Let Your Life Bloom Like a Brilliant Flower

Nandasiri: I want to work to improve international relations between Japan and Sri Lanka. Sri Lanka was colonized by the United Kingdom and the legal system is influenced by Europe. Japan learned the Germany and British legal systems in the Meiji era, in order to accomplish modernization. I want to learn more about these various experiences, not just in Japan but also all over Asia, and become a strong and highly motivated leader. The friendly relationship between Sri Lanka and Japan has been going on for more than 60 years. I hope the Leading Program is successful, and will have an environment in which Japanese and foreign students will be able to continue to study and research together.

Nagas: It is expected that in the future, information technology will be further developed, and by 2020, data will be more than 20 times greater. By analyzing these enormous data and utilizing them, I would like to research more about the technological development of Japan, which has benefitted the whole society.

Tsui: Right now, my current goal is to improve my English skills so that I can work as an intern for a prestigious international organization. In addition, by talking with foreign students in the Leading Program, I notice that there are many countries where more support systems for the working woman are established, even better than in Japan. I want to go to such countries and think about how I can continue my career while balancing family with work, and in the end, advance myself by doing what I can. I am glad if I am able to play an active part in an international organization such as WHO or UNFPA because I am interested in health problems. Had I not entered this program, I don’t think that I would have considered working for international organizations.

Nakazawa: I am interested in science communication. For science communication, the ability to explain my research is necessary. Actually, it is difficult to explain my research to people, but I want to try to let them understand, and through that, contribute to the society. I want to convey to youth that science is interesting, not just in Japan, but also all over the world.

Hanaoka: In the future, I want to be engaged in developing things that make people’s dreams come true. Satellites are launched to unravel the mysteries of the universe and to be helpful for people. The desire to develop satellites made me enter the Leading Program, and I would like to live with these dreams and spirit for the goal to develop a far-infrared sensor in the laboratory I belong to, which becomes the ‘eye’ of a satellite.

Sato: If you think about the Leading Program economically, the university has received a large amount of support and many students have benefited, therefore I do not think it is possible that this program will come to a deadlock. When I think about social responsibility even if it is very small, I feel the sense of duty to have to produce results of research. When I went for overseas training in Thailand, I visited an organization that undertakes economic surveys for the United Nations, and I became interested in its work. I might stay at the university and continue to study in the future. In any case, I would like to have a job that will benefit the world.

Maeshima: That is good. After listening to all your opinions, what makes me very happy is the fact that you are future-oriented people full of hope, looking 10 years, or 20 years ahead. You look ahead to the future and want to play an active role boldly, even if you cannot do it right now. I really appreciate this, which is one of the achievements of the Leading Program.

The Leading Program is a program to foster in a sense, selected students, with the thoughts of faculty to instruct and students’ efforts, not to mention the support from the Japanese government. There are no rules the program has to follow in a rigid way. I hope each one of you will adopt what you think is good for yourself, and will become a unique leader. A leader is not only one in executive positions such as a company president or a director of a research institute. A human being has a right hand and a left hand, and an orchestra conductor commands with a baton in the right hand and uses the left hand to show expression. In other words, both the right hand and the left hand have distinct roles to play in an orchestra performance. Likewise, when you eat rice, it is difficult to eat without the left hand. In the same way, for leadership, there is a leader who wields a baton in the right hand and uses the left hand to show expression. In other words, both hands have different and highly related tasks. The Leading Program brought these valuable experiences. I want to keep challenging myself. In our program, I have an opportunity in planning an ideal satellite with my team members. It is such fun to think about what type of satellites we can build and how it functions, which allows us the experience of starting from scratch.

Nandasiri: This summer, I am going to visit researchers of the University of Cambridge in the UK to do research and interview. I am very thankful because this is possible only because of the Leading Program.

Maeshima: Since participating in the program, is there anything that has impressed you?
Integrative Graduate Education and Research Program in Green Natural Sciences

CONCEPT

Solving environmental and energy related problems permanently, in order to develop a more sustainable society

Program Coordinator
Kunio AWAGA
Professor
Graduate School of Science

Recently our societies are facing difficult challenges in issues relating to, among other things, energy and the environment. It is a critical task imposed on modern sciences, to break away from the excessive dependence on fossil fuels and nuclear energy, and to realize the development of a sustainable society. With this comes the urgent need to develop human resources who can look at such problems from a multidirectional angle in order to solve these challenges in a creative manner.

This program aims to find lasting solutions to problems relating to the environment and energy, through the development of green natural sciences. Students will pursue science technology focusing on the stable supply of materials, energy, and food. They will do so by researching such materials and the processes of energy conversion, as well as other circulation mechanisms found in nature, which proceed with the help of the continuous source of solar energy, and applying their academic achievements to material production and system life sciences. While improving the level of dissertations and research, doctoral students will cultivate their “scientific ability and social skills in order to look upon challenges from a broad perspective,” as well as their “ability to extract practical results from fundamental research,” and their “international experience in order to play an active role in the world” through internationalized education.

Through this program, which stretches across science, engineering and bioscienceture, many students work together in competition and raise the ability of each other. In addition, we encourage the independence and individuality of students, and allow them to enroll in courses which suit them.

Since the program contains the possibility to study abroad, participate in internships and various seminars, students need to plan in advance in order to meet the strict completion requirements. This environment, being at the same time free and demanding, trains the student’s independence and their ability to survive in our competitive society.

The vision of this program is to foster human resources who have the courage and ingenuity to lead the development of green natural sciences. We believe that the students who graduate from this program will contribute to the development of a sustainable society as leaders, and will take the environmental field to the next level.

The curriculum is characteristic for its high specialty and diversity

The promotion of women working in science should be considered a priority in social development. With the aim of being a frontrunner in this topic, we have formed a special team led by the top female scientists of our University, and have worked to develop linkages with top universities overseas as well as with promoted female scientists. For example, every year “off-site meetings with the focus on developing female leaders” are organized exclusively for female students. Stimulated by the questions on why so few female leaders, each student is encouraged to reflect about their vision and desired future career paths, with the encouragement of a female role model who is a leader in her field.

Developing top level female scientists to become future leaders

The vision of this program is to foster human resources who have the courage and ingenuity to lead the development of green natural sciences. We believe that the students who graduate from this program will contribute to the development of a sustainable society as leaders, and will take the environmental field to the next level.

DATA

[Composite Category-Environment] Selected for FY2011

[Application Eligibility]
Graduate School of Science (Division of Material Science, Division of Biological Science); Graduate School of Engineering (Department of Applied Chemistry, Chemical Engineering and Biotechnology, Department of Molecular Design and Engineering, Department of Crystaline Materials Science); Graduate School of Bioagricultural Sciences (Department of Biological Mechanisms and Functions, Department of Applied Molecular Biosciences, Department of Bio-engineering Sciences)

[Partner Institutions, etc.] 6 institutions
Institute for Molecular Science (IMS); National Institute for Basic Biology (NIBB); RIKEN; National Institute of Advanced Industrial Science and Technology (AIST); Toyota Central R&D Labs., Inc.; Toyota Physical and Chemical Research Institute

Seminars organized by graduate students

We provide opportunities to work out educational plans drawn up by students. Students have to carry out their plans by themselves, for instance, some groups of students have implemented a tutorial service to open up a new research field, a workshop to develop interdisciplinary fields, and a symposium to discuss the challenges and future directions for various world issues as scientists. Through the implementations of their plans, students can acquire a range of practical and theoretical skills particularly in leadership team building, negotiation, and problem-solving.
The Program for Cross-Border Legal Institution Design

CONCEPT

Developing leaders who can build attractive social institutions across borders

PROGRAM

Acquiring leadership skills through international internship networks

The international internship and field research programs are pillar programs that foster leaders in law and institutional design. Our program encourages project proposals by students. By working through these programs students gain practical skills and develop international networks. At the outset, students pursue projects endorsed by the faculty on their own initiative. Students may experience failures and troubles but they will acquire from these errors the critical skills for their future tasks in the global community. Nagoya University’s global network with collaborative institutions enriches student activity. Students are able to identify their own research ideas, such as the reform of immigration laws or the regulation of over-fishing.

Fostering project management skills in a multicultural work group

Lawyers alone cannot achieve social and legal reform. Extended exchange among experts on history, religion, politics and social studies will lead to innovative ideas and better laws. The next generation of global leaders needs the ability to organize and lead diverse international teams. Therefore, this program promotes group work. International student teams are organized to conduct collaborative research on a selected topic. Within this dynamic framework, students learn essential skills and knowledge as a future leader of institutional design and legal transplantation. Each team makes a presentation at an international symposium they organize to receive feedback from a critical audience.

DATA

[“Only-one” Category] Selected for FY2011

(Application Eligibility)

Master’s program (First stage of the doctoral program)
A bachelor’s degree in law or political science, or the degree will be awarded by an admission decision

Doctoral program (Second stage of the doctoral program)
A master’s degree in law or political science, or the degree will be awarded by an admission decision

COLUMNS

Developing an original English program for Asia

Strong English communication skills are essential during negotiations or during debate within international organizations. English ability required for admission is equal to the level required by the Fulbright Program. All lectures of our program will be taught in English to improve the English ability of students. Students practice English on a daily basis and are trained through academic writing courses. This unique English program will enhance English proficiency throughout the University. Our graduates will take an active role in shaping the future of Asia.
PhD Professional: Gateway to Success in Frontier Asia

Fostering global leaders who can devise next-generation growth strategy and support international business and collaboration

CONCEPT

North Carolina Ambition Camp

There is an urgent need to foster global leaders who can create and realize the growth strategies for the next generation to revitalize Japanese manufacturing industry, in cooperation with Asian countries that have the potential to lead the world economy.

The aim of this program is to foster global leaders equipped with broad perspectives and practical abilities. We develop professionals who can apply problem-solving abilities that are acquired by practical and innovative programs beyond the academic field, flexibly to international community. We mainly offer opportunities for practical training in Cambodia, Mongolia, and Vietnam and so on, where Nagoya University has built research bases. This training provides valuable experience for students to understand the reality and feel the vitality of these Frontier Asian countries that are undergoing rapid economic growth, since most students grow up in the period of stagnation after the Japanese bubble economy. It is not only the best training toward finding solutions to problems by cooperating with people of different fields and different cultures, but also a chance for students’ self-development by knowing people’s motivation for development and by increasing their opportunities to participate in development. In addition, in their daily lives, Japanese students live together with foreign students, allowing them to share their diverse cultures and academic backgrounds.

In this program, to acquire practical skills, we prepare a variety of coursework, such as discussions with top leaders of industry, academic and government, and study of international business development with the cooperation of businesspersons as mentors. As a final step, students implement the career creation project, “Gateway to Success” to practice the process of independent problem finding, requirement setting, and resolution, based on the students’ autonomous proposals. We develop human resources with abilities to become global leaders in supporting international business development and international cooperation in all fields of society.

Developing “PhD Professionals” based on “core and spoke” model

We foster highly remarkable “PhD Professionals” who will play active roles as leaders in diverse fields of society. In this program, we regard the “core” ability as the advanced specialty that should be acquired in each student’s respective graduate school, and “spoke” as the abilities to utilize the “core” ability in an international and practical environment. The “spoke” covers five competencies, namely, abilities for autonomous proposal making and resolution, abilities of communication and management, international mind and cultural understanding, understanding of different fields, and abilities of debating and self-expression. We provide a well-developed structured curriculum, including discussion sessions with Nobel laureates and top leaders from different fields of industry, media, law, politics and so on, and transferable skills training (which is now being implemented by many universities in the UK), so that students acquire those abilities at high levels. In addition, as a final step, students make proposals on their own, autonomously identify problems, set requirements, and propose solutions, through the career creation project, “Gateway to Success.”

Cultivating international communication skills through overseas training and language education

It is indispensable for global leaders to have communication skills and cultural understanding, as well as a proactive attitude to express their own opinions. This program provides language training in cooperation with the British Council, and fosters English proficiency including the understanding of cultural aspects. Through a variety of coursework consisting of lectures on international issues, students develop cultural understanding concerning the differences between their own culture and the cultures of others. During the master’s course, students are obliged to participate three times in overseas training in Frontier Asian countries and the UK. Furthermore, we carry out an “Ambition Camp” utilizing Nagoya University’s base in North Carolina, USA, during the doctoral course. Students learn about entrepreneurship and the business society in an international environment.

DATA

[All-around Category] Selected for FY2012

[Application Eligibility]

All Graduate Schools (except the Department of Practical Legal Personnel Training, Graduate School of Law) and all departments of all departments except the Department of Practical Legal Personnel Training (All Departments of All Departments except the Department of Practical Legal Personnel Training, Graduate School of Law)

[Partner Companies, etc.] 12 companies/governmental agencies

Tokai Television Broadcasting Co., Ltd.; Toyota Motor Corporation; Chubu Electric Power Co., Inc.; Churushi Shimbun Co., Ltd.; Denso Corporation; HOK Insulators, Ltd.; The Osaka Kyoritsu Bank, Ltd.; Tokai Medical Products, Inc.; IBM Japan, Ltd.; Aichi Prefecture; Nagoya City; Chubu Bureau of Economy, Trade and Industry, METI

COLUMN

Mentorship creating a vision for the future

Mentorship is also one of the major features of this program, which will lead to a better overall understanding of the students’ fields as well as changing in consciousness and behavior in the master’s course, young professors from different fields are assigned as “Young Mentors” and help students to understand different fields of research. In the doctoral course, in cooperation with companies and governmental agencies, businesspersons are also assigned as “Business Mentors” to share their practical experiences and knowledge. The advice of mentors will help students build a vision and career path for the future.
**Leadership Development Program for Space Exploration and Research**

**Creating New Industry for the Coming Generations through Industry-Academia-Government Collaboration and Interdisciplinary Science and Engineering**

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**CONCEPT**

Development of international leaders who can spark creativity and pioneer the final human frontier of space

**Program Coordinator**

Hiroyasu TAJIMA
Professor
Institute for Space-Earth Environmental Research

Space is the final remaining frontier for humans, and it holds the keys to further progress. Space infrastructure related to the environment, materials, information, and safety has become commonplace in modern society, and the use of space technology has spread to a wide range of industries, foremost in communication and broadcast satellites and GPS. The harsh space environment drives technical development and is a source of innovation for new industry, offering unlimited possibilities.

The exploration and utilization of space is also an important issue for the peace of nations, and countries around the world have expended much energy and effort in this area. Western countries in particular are seeing progress in the use of space by private companies. In Japan, in contrast, most space programs depend on government funding and the latest findings and technologies are not being fully utilized. Space exploration and utilization requires the comprehensive combination of science and engineering in broad fields. There is a strong demand for leaders with high levels of expertise and broad knowledge who are active in the global stage. Our program addresses the two major matters of space exploration and space utilization based on private demand.

Making the most of the location of Nagoya University, the Chubu Region which is the center of Japan’s space industry, the program integrates the latest findings and technology related to space with a comprehensive perspective, and produces international leaders who will help to drive industry forward. Through the network of our graduates we aim to expand space utilization to help make people’s lives better, contribute to the development of the manufacturing industry, and lead to the creation of next-generation industry. Particular emphasis is given to growth through experience in developing leaders who can spearhead projects with broad knowledge and experience across the science and engineering fields. In the ChubuSat Instrument Development Project, for example, the process of running one’s own project and resolving problems while overcoming failures helps students to grow.

In internships, practical experience leads to expanded abilities. These internships are also valuable opportunities for companies to learn the value of our doctoral candidates. The possibilities for space utilization continue to expand. Individuals from our program with a strong pioneering spirit will be a significant force in opening new pathways to tomorrow.

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**ChubuSat—Satellite Instrument Development Project**

An industry-academia project, ChubuSat is being carried out in collaboration with industry in the Chubu Region. Taking advantage of the ChubuSat project, a joint industry-academia microsatellite project led by Nagoya University, students produce satellite instruments for development and carry out simulations, design, fabrication, environmental tests, preparation of installation, operation, and data analysis, experiencing every step from conception to completion. Unlike laboratory experiments with predetermined procedures, teams of 5–9 students from different fields work together to execute their projects through friendly competition and overcoming failures. Through cross-disciplinary interactions, students develop not only abilities that are useful in space-related industry, but also those that will be useful to them as leaders in the development of a wide range of industries, such as planning, project management, and problem-solving skills.

**Internships to provide experience beyond the university environment**

To develop the abilities needed by leaders through diverse experiences outside the university, students are required to complete an internship at one or more of our affiliated institutions including companies in Japan and other countries and international research institutions. In corporate internships, students acquire execution and problem-solving skills through experiences in practical environments that will help guide their career paths. In addition to aerospace, the companies that accept interns span a wide range of fields from general companies to mass production companies, and at the same time for companies to experience the value of our doctoral candidates. In internships at research institutions outside Japan, students acquire international communication skills while experiencing global research environments. These international internships are planned by students themselves.

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**DATA**

**[Composite Category-Cross-Cutting Themes-]**

Selected for FY2012

**[Application Eligibility]**

All Graduate Schools (All Departments)

**[Partner Universities]**

8 universities

University of Oxford; Ohio State University; University of California, Berkeley; University of Colorado; Seoul National University; University of Michigan; Michigan State University; University of Leicester

**[Partner Companies]**

6 companies

Aerospace Division, Mitsubishi Heavy Industries, Ltd.; Mitsubishi Electric Advanced Technology R&D Center; NEC Space Systems, Ltd.; Boeing Company; Toyota Motor Corporation; Hamamatsu Photonics

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**COLUMN**

Developing leaders with emphasis on independence and execution ability

Leaders in various fields are invited to relate their own experiences and a global leadership training course helps students to gain the knowledge needed to become international leaders through interactive practices. Through these opportunities students can enhance styles of leadership suited to their own abilities and acquire real-world knowledge. Further opportunities are provided for students to think deeply about what is needed in a leader and to put this into practice by preparing seminar topics and materials, planning and holding sessions to discuss and exchange opinions on various issues with faculty members, and various student-organized activities. Faculty members constantly monitor the activities organized by students, and assess student achievements, which cannot be measured by grades only, based on their leadership abilities and levels of contribution.
Creating new social value, and fostering doctoral degree holders who can apply data science to industrial science

Program Coordinator
Kazuya TAKEDA
Professor
Graduate School of Information Science

Real-World Data Circulation is a new field of study that has been established by the Information Technology (IT) community. For a new production, a computer can analyze some complicated phenomenon represented in numbers. However, an analysis that leads to production does not essentially create “social value.” It should be noted that a social value is what many people share; hence it cannot be predicted or created by a production designer. We often launch implemented products and services in society and acquire users’ impressions or dissatisfaction about the products in the form of data. We believe that analyzing the collected data and then reflecting the results of analysis on new designs and fabrication is the origin of value creation, namely value creation by “Real-World Data Circulation.”

In line with this, the goal of this program is precisely the training of human resources to support “Real-World Data Circulation” studies. Therefore, we have developed a diverse and practical curriculum across four fields which “support value,” namely, engineering, information science, medicine, and economics. The specific image of a person to be trained and delivered to society is a global leader having a doctoral degree in a field related to industrial science. In other words, each student customizes his/her own study range and acquires a variety of knowledge provided by the program, mainly based on practical or industrial related science, rather than the conventional basic science. Consequently, the student will be able to foster his/her own ability towards development and value creation of a new field of application, and become a future leader in industry.

One of the essential elements for learning Real-World Data Circulation techniques is to become an expert in using data processing tools. Students can learn common mathematical techniques systematically, which is applicable to different fields such as DNA analysis for medicine and demographic analysis for economics. Additionally, through our collaborations with industry, we invite many key individuals from companies to introduce their perspective of social value to our students.

The innovation of the production process by IT, which is referred to as “Industry 4.0,” has recently advanced. It is doctoral degree holders with determination who will take up challenges for the next generation. Our program would like to send such individuals out to the real-world in order to create social value and contribute to the development of the society.

Course work to acquire high expertise and real-world work to develop practical skills

The essence of social values that products and services bring is what people share as fundamental values such as “convenience, joy, health, and affinity.” Such values are formed in exchange of “desires of users” and “thoughts of creators,” but the desires of users are constantly changing and are elusive. Real-World Data Circulation studies consider the desires of users and attempt to tie them to new products and services. In this program, students learn three study domains (acquisition, analysis and implementation) comprehensively. Students “acquire” the desires of users as digital data through the observation of various phenomena of the real-world, “analyze” the background of the data and the entire data by using information technology, and “implement” the results of analysis as innovative products and services.

The experiment studio where possibilities are endless

This program offers places called the Leaders’ Saloon and Leaders’ Studio where state-of-art facilities and information equipment are available, and where students can think freely and create ideas. The Leaders’ Saloon has discussion tables and digital poster panels installed, which can be operated with a touch panel by projection from a tablet terminal. It is utilized as a place for free interaction by students from different fields. The Leaders’ Studio, equipped with a laser cutter and 3D printers, is an experiment studio in which students can mold ideas freely. We have created a good environment for manufacturing. Because indoor projector illumination and all window shades are programmable, a production space can be provided when data measurement, display, and presentation are performed.

National Institute of Informatics; Research Organization of Information and Systems; National Center for Geriatrics and Gerontology; Hanoi University of Science and Technology; Istanbul Technical University; Carnegie Mellon University; University of Scourbarum Denmark; University of Queensland; New York University

Toyota Central R&D Labs.; DENSO; MHI with industry with the aim of developing industry leaders. Under themes such as “social entrepreneurship based on data circulation” and “utilization of the public transport big data,” company mentors and students undertake cooperative work. The students learn business sense from company mentors and work on business model planning in a group. Sometimes opinions vary, but it is a valuable experience in order to acquire leadership skills. Through group work, we grow the entire entrepreneur spirit and foster the ability to play an active role in a company.
Women Leaders Program to Promote “Well-being” in Asia

Program Coordinator
Hiroko TSUKAMURA
Professor
Graduate School of Bioagricultural Sciences

The key for the development of a sustainable society rests on the “success of women.” In Asia, where multicultural societies are in various stages of development, there is great concern over issues such as poverty, healthcare, and gender gaps. It is necessary for women to form networks and partnerships with each other that transcend ethnic origins, nationality and religion, in order to solve these common issues in fields such as food, health, and environment where women traditionally contribute substantially. Our program focuses on these fields, which are closely related to issues in Asia.

We aim to develop women leaders who play active roles globally, have solid expertise, a comprehensive perspective, an international awareness based on a cross-cultural mutual understanding, a sense of mission, and future vision. Our goal is to realize “Well-being” - individual rights and personal fulfillment guaranteed under excellent physical, mental, and social conditions. This five-year interdisciplinary program encompasses four Graduate Schools: International Development, Education and Human Development, Bioagricultural Sciences, and Medicine (including Health Sciences). Its major feature is to facilitate the acquisition of “integrated knowledge” and to cultivate “six core capabilities,” which are difficult to develop through a conventional “compartmentalized” university education system.

Our aim is to nurture students with the ability to find solutions when confronted with challenges. At present, multi-national students interact, learn together and build friendships. Additionally, male students also participate in our program because men who understand and promote gender equality are indispensable for the sustainable success of women leaders. Under this privileged environment, students steadily acquire the confidence and awareness to play an active role as leaders, moreover, students develop their English skills rapidly through our practical English education.

Furthermore, in 2015, Nagoya University was selected as one of the top universities in the world that have made advanced efforts to promote gender equality, by the UN Women’s “HeForShe” campaign. Our multifarious activities to achieve gender equality have met with high acclaim. In the near future, graduates of our program will aspire to be global leaders in policy-making institutions, international organizations, and enterprises. Women from Asia and the world.

A five-year interdisciplinary program to foster integrated knowledge

Acquiring six core abilities to play an active role in the world

DATA

Composite Category-Pluralistic Society

Selected for FY2013

[Application Eligibility]
Graduate School of International Development; Graduate School of Education and Human Development; Graduate School of Bioagricultural Sciences; Graduate School of Medicine (including Health Sciences)

[Partner Universities]
15 universities
University of the Philippines; Lund University; Royal University of Agriculture in Cambodia; D IPOPE University; Chulalongkorn University; Royal University of Phnom Penh; Gadjah Mada University; National University of Singapore; National University of Laos; University of the Philippines Los Banos; Vietnam National University, Hanoi; Indian Institute of Technology Bombay; University of Dhaka; University of Ottawa; United Nations University Institute of Advanced Studies

[Partner Institutions]
6 institutions
Ministry of Foreign Affairs of Japan; Japan International Cooperation Agency (JICA); United Nations Children’s Fund (UNICEF); United Nations Population Fund (UNFPA); World Bank; Asian Development Bank (ADB)

Overseas fieldwork to develop an interdisciplinary mindset

Practical education based on collaboration with international organizations and well-organized mentoring system

In order to solve the problems that global communities face, it is important to experience different cultures and cultivate a comprehensive and international perspective toward interdisciplinary research themes. Therefore, we have implemented a curriculum that includes lectures and seminars in English and practical education in cooperation with partner universities in Asia and international organizations/intergovernmental organizations. These include: the United Nations Children’s Fund (UNICEF), United Nations Population Fund (UNFPA), and Japan International Cooperation Agency (JICA), and global enterprises. In addition to the elaborate instruction system provided by our Graduate Schools, we conduct continuous support both during and after the program through the university’s well regarded mentoring system.

Envisioning a career path and acquiring skills to realize the goal

At workshops for global leader development, we invite global leaders from organizations such as UNICEF, UNFPA, FAO, and JICA as lecturers, and they discuss various issues on “well-being”. They also highlight the skills needed to work actively in the international society and strategies for career development. Furthermore, after the lectures, there are career counseling sessions. These workshops provide students with an opportunity to think about their future vision, career path and develop the skills to realize them under the direct instruction of the lecturers.

COLUMNS

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