



Fostering long-term creativity and innovation with science and technology disciplines based on Ochanomizu spirit "Migakazuba" in the next generation of global leaders

Program for Leading Graduate Schools

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Bouquet

Newsletter

Ochanomizu University

Topic

Polish yourself and bring change to society!

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お茶の水女子大学
Ochanomizu University

Polish yourself and bring change to society!

Leading the new era under the spirit of "Migakazuba"

Greetings from the President



Kimiko Murofushi, Ph.D.
President,
Ochanomizu University

With its selection in 2013 to participate in the "Program for Leading Graduate Schools" by the Ministry of Education, Culture, Sports, Science and Technology, Ochanomizu University has initiated a new minor doctoral course. Based on the spirit of "Migakazuba" where the title is derived from our school song, "A gem or mirror is only produced through the act of polishing; the same is true of those who take the path of learning." Our wish is that those studying in this university will regard themselves as uncut stones and polish themselves into true gems, devoting themselves to producing innovations in many different fields. We hope you will grow and develop into talented women who will change the world for the better. Since the establishment of doctoral programs at the Graduate School of Ochanomizu University, we have promoted interdisciplinary research that goes beyond the boundaries of specific disciplines. Professors from several different fields provide each student with instruction from a variety of perspectives. Ochanomizu University's point of pride is that approximately ten percent of female doctorate holders who got their degrees from national universities completed our doctoral programs, and that our graduates have gone on to be known as "the first women" in various fields in Japan. This program cultivates talented women who can put their previous achievements in study and research to use to obtain broad perspectives, deep specialized knowledge and insights. The goal is to foster the talented women who play the active part in the fields of industry and government as leaders in science and engineering who can tackle issues with a global perspective. We would greatly appreciate your continued guidance and support to us.

Program mission

Develop global human resources who continue to create innovation, and will be an immediate asset to companies and other organizations.

How to participate in the program

Students belonging to the following graduate courses are eligible to participate in this program: Division of Life Sciences (Biological Sciences, Human-Environmental Sciences, Food and Nutritional Sciences, and Genetic Counseling), and the Division of Advanced Sciences (Mathematics, Physics, Chemistry and Biochemistry, and Computer Science). Selection exams for this program are held twice a year (timed to the entrance exam for these graduate schools) for students who wish to enter the above graduate courses and are intending to pursue a doctoral degree.

Minor Course of Science and Technology for Global Leaders

Students of this program will advance in their learning in line with the curriculum for the Minor Course of Science and Technology for Global Leaders. This program has the following three features.

Reinforcement of Basic Science

The program offers such courses that strengthen basic learning, as Essential Courses by putting emphasis on physics, mathematics and computer science. All classes are conducted in English language. (See page 6 for courses held during Academic Year 2015)

Strengthening of Teamwork Capabilities

Students specializing in different fields will gather to conduct a team study called PBTS (Project Based Team Study). In Academic Year 2014, four teams were formed and are working in their respective research target.

Strengthening Global Capabilities

The program not only strengthens English abilities, but also enhances comprehensive learning through the provision of Career Education, Leader Education, IT practicals and Liberal Arts. From Academic Year 2015, the first batch students will experience internships (Global Internship) at companies and/or organizations both in and outside Japan.

Close relationship with industries, government, and educational organizations

This program provides broad opportunities within society. It dispatches students to leading companies and research institutes both in and outside Japan, thus providing support in establishing career paths for the students.

Cooperating with:

- Industry: IHI, TOSHIBA, Nikon, SONY, IBM etc.
- Government Office / NGO: WWF Japan, J-Win
- Overseas Research Institutes: UEA, ESPCI, CERN, ORNL, BNL etc.
- Domestic Research Institutes: SOKENDAI, NII, ISM, IMS, RIKEN, NIMS, AIST, JAEA
- Financial business Communities: Japan Association of Corporate Executives



Visit to Riken BSI

Educational Reform in University Changing of Awareness in Corporations



Scheduled activities for Academic Year 2015 (April 2015 ~ March 2016)

- April-December 2015: Global Internship I (First batch students)
- April-September 2015: pre-PBTS (Second batch students)
- August 2015: Selection examination for students of 2015 (October term)
- August-September 2015: Advanced Scientific instrument rotation (laboratory work)
- September 2015: Summer program (tentative)
- September 2015: pQE* (First and Second batch students)
- October 2015: PBTS I begins (Second batch students)
- October 24-25, 2015: Participation in the Leading Program Forum 2015
- February 2016: Selection examination for Academic Year 2016 April term students
- March 2016: Completion report by mQE** (First batch students), pQE (First and Second batch students), and PBTS I (First batch students)

* pQE= periodic Qualifying Examination **mQE= middle Qualifying Examination

ACTIVITY REPORT

It is the second year since the program started. We have approached a new chapter. Here we introduce to you five examples of our activities; "Global Internship I", which has started this spring; and PBTS team studies, which are currently in progress and more.

01 Report on Global Internship

Global Internship, which is a feature of this program, is a compulsory course where students visit/study at an industrial, government, and educational organizations in or outside of Japan for an extended period of time to conduct research activities. Students participate in Global Internship I conducted during Master's program, and Global Internship II conducted during the doctoral Program. Our first batch of students are currently participating in Global Internship I. These students develop research reports every week, and participate in PBTS meetings through Skype. In the future, we are scheduling research report meetings held by students who have completed their Global Internship program.

Internships (as of July 2015): New York University (United States), University of Oxford (United Kingdom), City office and welfare related facilities (Republic of Paraguay), University of Technology, Sydney (Australia), National Institute of Health and Nutrition (Japan)



02 PBTS Report

One of the PBTS teams, the "anti-aging team", is studying about some beverages with anti-aging effects. Especially, they focus on the anti-aging ingredients that are contained in Japanese tea. Having learnt the tea manufacturing processes such as steaming and leaf-rolling, They are analysing the effect of the process conditions on the content of ingredients in the leaves.



03 Study Commons members held "Weekly Lunch Seminar"

February 10 - May 19, 2015 (14 Sessions)

Professors belonging to the Study Commons of the Leading Graduate School Promotion Center conducted a total of 14 seminars that were held weekly on campus. Professors who arrived at their post in the previous year introduced their academic background, and helped to deepen the exchange between the program and the rest of the campus. At each seminar, the professors gave a presentation on their specialized field of study. These themes spanned a broad range of subjects, including chemistry, physics, mathematics, engineering, IT, health promotion, humanoid robots, biology, DNA computing system, botany, computational origami, international disputes, and more. Participating students also voiced many questions and opinions. Such active and informative programs led by the professors will continue to be held in the future.



04 "Origami Workshop" to learn the relationship between mathematics and origami

June 10, 24, and July 15, 2015 (3 Sessions)



An Origami Workshop was held by an instructor specializing in computational origami under the theme of "experiencing modern origami through a new method." All participants learned about origami, which is attracting interest from around the world, and tried making origami from a design plan on how to fold the paper. This was held as an event for students, but it proved to be highly popular and was attended by high school students, and professors from other schools within our campus in addition to those from other universities as well. In the future, we are planning to host seminars and other programs with a theme of origami and its relationship to programming and mathematics with a more scientific approach. Professor: Fadoua Ghourabi (Project Professor, Leading Graduate School Promotion Center)

Comments from participants

"I tried module origami for the first time, but thanks to the staff members' help, I could easily understand."
 "I acquired an interest in origami programming."
 "I was amazed at how a cubic shape could be transformed into a rose."

05 Exhibited at the International Education Fair in Krakow (Poland) and visited Central, East Europe

March 20-30, 2015

Program coordinator, Professor Hazuki Furukawa and Lecturer Yamamoto Ravor represented Ochanomizu University at the International Education Fair on 26-28 March in Krakow. As one of the most important annual education fairs in Europe, the event attracted 11,000 visitors and our booth in particular received extraordinary attention. Information about Ochanomizu University and our Program was exchanged with visitors as well as with top ranked European universities and research institutes exhibiting at this fair, which showed great interest in our educational offering. On this auspicious promotion activity occasion, we also visited some of the most renowned universities in Romania and the Czech Republic and opened new doors for academic cooperation and student interaction.



ESSENTIAL

Overview of Innovation Creation Fundamental Courses

Courses held in English are open to all Graduate School students.



《 Courses offered in 2015 》

- 1 Essential Mathematics for Global Leaders I**
Due to the different backgrounds among the students in this course, the main purpose is to reactivate basic mathematical notions already learned.
- 2 Essential Computer Science for Global Leaders I**
In this course, light will be shed on some of the basic concepts of computer science: operating systems, programming languages, and networking.
- 3 Essential Chemistry for Global Leaders I**
This course conveys the excitement of contemporary chemistry, exploring the frontiers of research and relating them to the basic concepts.
- 4 Essential Engineering and Technology for Global Leaders II**
This course focuses on health technologies, especially the prevention of non-communicable diseases and the extension of healthy life expectancy.

▶ Messages from Professors

Xavier Dahan Project Associate Professor / Essential Mathematics for Global Leaders

Hello, I am among the numerous French of this program! But like my mates I have a strong international experience. I have worked in Canada (Ontario) and had made numerous visits there. I have spent the last 8 years in Japan: first at Rikkyo University, then at Kyushu university with a short period at a research institute in Fukuoka. At Kyushu University I was Assistant Professor at the "Institute of Mathematics for Industry" (IMI), the largest institute devoted to applied mathematics in Japan. I could considerably broaden my vision of research, which has kept diversifying so far: computational algebra, cryptography, graph theory and now some biological mathematics at Ochanomizu.



Md. Khayrul Bashar Project Associate Professor / Essential Computer Science for Global Leaders

Having professional experiences at top-ranked universities in several countries, I began work as an associate professor at Ochanomizu University in April 2014. I teach two courses "Essential Computer Science for Global Leaders-I&II", which discuss about fundamental computing concepts, programming, and practical computational algorithms that lead to acquire problem solving skills. My research field is "image analysis and computer vision". Current focus is the application of mathematical, image and signal processing, and machine learning theories to address problems in biomedical engineering and sciences.



Gary Richards Project Associate Professor / Essential Chemistry for Global Leaders

I came to Japan in 2004, initially on a working holiday. I then found a research position at NIMS in Tsukuba working on supramolecular chemistry over a five-year period. Following this, I worked for a short time at Nihon University, and then as an assistant professor at Tsukuba University. I began work as an associate professor at Ochanomizu University in October 2014. In this program we are not simply aiming for students to successfully complete a research program, we also want students to participate with other students from different backgrounds. It is a big challenge for everyone concerned but during my relatively short time working in the program, I have been delighted to see a big change in our students!



Julien Tripette Project Associate Professor / Essential Engineering and Technology for Global Leaders

Hi, my name is Julien and I am French. In order to conduct my research projects, I stayed in various countries, including West Indies, Senegal, China and Canada. I arrived in Japan in 2012 to work at the National Institute of Health and Nutrition. My current research works aim at developing innovative strategies to make people move! Physical activity is known as the best prevention tool against cardiovascular (heart) diseases, and I believe people can take advantage of new smart information and communication technologies (ICT) to be more active and develop healthier lifestyles. I encourage any student from Ochanomizu interested in ICT technology and health promotion to contact me.



Sabine Gouraud Project Associate Professor / Essential Bioinformatics for Global Leaders

I am Sabine Gouraud from France. My biological research interests are focused on the brain mechanisms underlying essential hypertension and gender differences in cardiovascular regulation. I studied and worked in the biological field at several universities in 4 different countries; France, Italy, UK and Japan. By broadening your horizons, this program will help you to build your personality and find the best innovative ideas to become a real global leader. I wish I could get all these opportunities when I was a student! It is your chance to get on this track!



New Students Interview

Misato Takahashi

Course: Physics
Hometown: Yamagata prefecture
Hobby: Playing tennis



My major is solid-state physics. Particularly I am doing research on the subject of strongly correlated electron system. I aim at materializing coexistence of superconductivity and ferromagnetism. It is interesting to compose samples that have special properties by my hands. I believe that researching with students belong to different fields through PBTS has potential. I would like to give my opinions from a physical viewpoint. I am excited to come across ideas from a different point of view that I could not get in my laboratory. Now I study hard to discuss in English and to broaden my knowledge. I hope to be a person having a global vision after five years.



Asako Yamasaki

Course: Biological Sciences
Hometown: Saga prefecture

I conduct research on seaweed Flora of Izu peninsula. I decided to participate in this program because I don't have confidence. This is because of my few experience and luck of knowledge. I think I will improve my confidence by this program. The good point of this program is to get flexibility. We can study not only my own major, but also other field. I hope I will see the world from a wider range of view.



Kasumi Higashine

Course: Biological Sciences
Hometown: Hyogo prefecture
Hobby: Watching movies, Tea ceremony

I am Higashine, a first year student in the first part of Doctoral course. I am from Awaji Island in Hyogo. My hobby is watching movies and tea ceremony, and I always watch two or three movies per week. My research field is neuroscience. Currently, I study development and differentiation of the cerebellum by using a mouse. The reason why I became interested in the brain was that I wanted to know more about the brain that controls a person's behavior or actions. The project on which I would like to work in PBTS is the applicability of modeling of brain shrinkage in diagnosis of depression. The symptom of depression is usually understood in terms of mental health, but a recent study shows that it is possible to detect a structural change in brain. Therefore I could like to develop a model to understand the symptom of depression in terms of brain structural change. My dream is to accomplish something that is useful for the world, even just one thing. For that I would like to work hard in the Leading Graduate School, and think about what the world needs. I hope to contribute to the society such that I can achieve a thing that was once thought to be impossible to achieve.

Megumi Kitagawa

Course: Mathematics
Hometown: Fukui prefecture
Hobby: Listening to music



I conduct research on operator algebras and quantum groups. I have joined this program from this April. Now I am beginning to recognize what skills and knowledge I need to develop through the coursework focused on fundamental skills to understand what is discussed in lessons, because the subjects are all which I had not studied before and even they are taught in English. Although it seems hard work for me, I want to get fundamental knowledge in science and engineering and also I want to learn how to communicate in English since it will be important for Project Based Team Study and Global Internship. Therefore I enjoy talking with the members of Study Commons in English and I really put my mind to training myself. My image for the future divides two parts. One part is to become an expert in mathematics. I am enthusiastic about studying math everyday. The other part is to do something good to build our society in which everyone in the world can be happy. Through this program I need to obtain fundamental knowledge in science and improve my skill for communication with people around the world in order to make my dreams come true.



Moeka Nakayama

Course: Chemistry and Biochemistry
Hometown: Tokyo Prefecture
Hobby: Travelling, Playing horn

I belong to the department of Advanced Sciences, taking a Chemistry and Biochemistry course. My favorite activity is to play a musical instrument in an orchestra and to go out on a trip. I am from Tokyo, but I grew up in the suburbs, where it is rich in greenery and nature. My newly found hobby is to visit exhibitions and museums in central Tokyo. I am currently studying in the Graduate School to clarify the mechanism of the activity of a protein which inhibits blood coagulation. The aim of joining this Leading Graduate School is not only to deepen my specialty but also to meet many people around the world and learn about the problems surrounding the people, and then to seek solutions. The plan is still rather vague, but I would like to experience something that I cannot experience only by being in the laboratory. I would like to make use of such experiences in the future society where women will play more active parts than they do now, bringing women's points of view to the society.



Duong Thi Thu Ha

Course: Biological Sciences
Hometown: Vietnam

I come from small country which you called Vietnam. The wonderful place has nurtured and winged to my dream to become a Biotechnology research scientist. I understood origin of life and mechanism of nature selection. Moreover, I had recognized that this life is the greatest journey I will ever be on and I must learn more and more. Therefore, I am here. Trying to learn Bioinformatics. I truly hope I could clearly understand about the processes occurring in body, and human disease mechanisms. Beside that, I am also fortunate to be involved in Programs for leader Graduate Schools of Ochanomizu University. I could learn how to work in a team, and also learn a lot from other fields. It really is a great opportunity to expand knowledge and developing myself. This is not only a big chance but also a challenge to me. But if we can pass all challenges we can make the dreams come true. As an eminent scientist said: "Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning."

■ Information on Selection examination

Selection process for Academic Year 2015 October term students

Application: August 17-26, 2015

Selection examination: August 31 - September 1, 2015

Acceptance announcements: September 4, 2015 (on the website)

Selection process for Academic Year 2016 April term students

Selection examination: February 22 & 23, 2016 (tentative)

Please visit the website for more details <http://www-w.cf.ocha.ac.jp/scitech/>

■ Report of activities

February - May, 2015	Weekly Lunch Seminar by Study Commons professors (total of 14 times)
March 11, 2015	Advanced orientation for new students
March 26-28, 2015	Exhibition at the International Education Fair in Krakow (Poland)
March 30, 2015	pQE implementation
April 3, 2015	Program explanations at the Graduate School orientation day
April 18, 2015	Program explanation at the Graduate School's open campus
June - July, 2015	Let's try it in English! Origami Workshop (total of 3 workshops)
July 21, 2015	Information session for prospective students

■ Information on offered lectures for Academic Year 2015 first term

April 13, 2015	Essential Mathematics for Global Leaders I
April 14, 2015	Essential Computer Science for Global Leaders I
April 15, 2015	Essential Chemistry for Global Leaders I
May 27, 2015	Essential Engineering & Technology for Global Leaders II

■ Report on implementation of Global Internship I

March - June, 2015	New York University (United States)
April - July, 2015	University of Oxford (United Kingdom)
June - September, 2015	Japanese Association in Pirapo, Himawari-kai (daycare group for the elderly), Pirapo City Hall (Republic of Paraguay)
June - September, 2015	University of Technology, Sydney Institute for sustainable Futures (Australia)
July - September, 2015	National Institute of Health and Nutrition (Japan)

Editor's notes

In April, we welcomed our new students, and Global Training I started for our first batch of students. Students should be able to acquire many new learning opportunities by pursuing their research activities outside of Japan and in business organizations. We hope that they will be able to produce satisfactory results through their PBTS research.

New brochures are now available! ▶



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