Ochanomizu University Program for Leading Graduate Schools

Bouquet

Vol.4
Newsletter
March 2015

What is the Program for Leading Graduate Schools in Ochanomizu University?

お茶の水女子大学
Ochanomizu University

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

What is the Program for Leading Graduate Schools in Ochanomizu University?

Science and Techonology for Global Leaders (Sub-major Course)

Message from Program Coordinator

Dr. Hazuki Furukawa

Warm greetings and thank you for your interest in Ochanomizu University. Our graduate special course titled “Science and Technology for Global Leaders” is tailored to complement your major course within the Life and Advanced Sciences Departments. This 5 years Master + Doctorate program aims at educating students to create innovations and flexibly respond to fast changing social needs and the global challenges that have never been more dynamic or complex.

On top of the highest-level scientific and technological knowledge acquired in the major, students are given the opportunity to acquire skills that will enable them to understand and work effectively with different background professionals and to cooperate efficiently within the cross-cultural global society.

Our program’s unique educational system consists of inputs designed to deliver the expected outcomes through innovative study processes: Essential courses of Physics, Mathematics and Computer Science, taught in English; practice to improve skills for innovation in research development; and cross-functional teamwork sessions called “Project Based Team Study” (PBTS), a corporate-like project management study environment. PBTS is the educational process that stimulates students with global perspectives to propose topics, team up with a majority of non-Japanese teachers and work together towards achieving the set scientific goals.

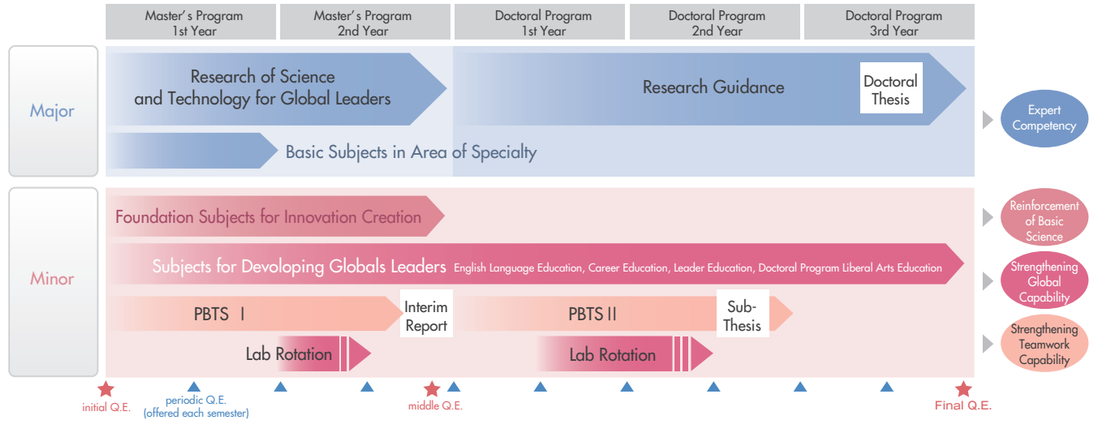
Advisors from industry and academia regularly evaluate the students’ overall progress and PBTS outcomes, ensuring students’ continuous improvement. The program’s strong collaboration with renowned organizations opens extraordinary opportunities for students to undertake research internships nationally and internationally, building the foundations of their careers as SciTech global leaders. Moreover, scholarships are available, on competitive basis, for those enrolling in our program.

Be prepared to respond with your utmost to the challenges and opportunities in our global SciTech community and let’s keep polishing ourselves for the greater good of the global society we are part of!

Hazuki Furukawa Ph.D. Professor, Advanced Sciences
Graduate School of Humanities & Sciences
Ochanomizu University

Study Commons teachers and Students

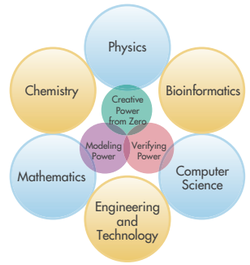
Curriculum of the Program



1 Innovation Creation Fundamental Courses

To be an innovator, a broad knowledge of basic sciences that makes it possible to find and solve new problems over multiple fields is required on top of a deep specialty deserving of a doctorate. Especially, the abilities in Physics, Mathematics, and Computer Science need to be improved in order to cultivate the following powers which make you possible to innovate flexibly under changing conditions: “Creative Power from Zero”, “Modeling Power”, “Verifying Power”. All classes in Innovation Creation Fundamental Courses are taught in English

→ **Please refer to the page 6 for the details of the Essential for Global Leaders classes.**

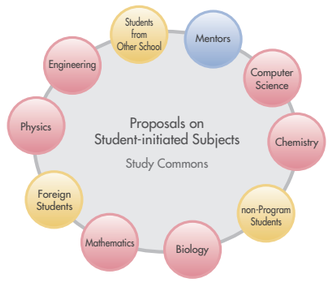


2 Global Leader Development Courses

To become a global leader, high level skills and abilities are required for language, communication and project management. Farthermore, career development learning, liberal arts to understand the world cultures, and IT skills to utilize information effectively will help your career at international level → **Please refer to the page 7 for the details of the Liberal Arts classes.**

3 PBTS (Project Based Team Study)

The highlighted feature of our program is “PBTS (Project Based Team Study)” modeled on research cases in actual businesses. In PBTS, the passive learning style of PBL (Project Based Learning) is replaced with independent, competitive and goal-oriented team study. This is an education system to develop students’ specialty and interpersonal skills most effectively through team study in which students with different backgrounds work together through friendly rivalry on the theme selected by themselves. Team members will work together and compete with other teams, and jointly write a sub-thesis in English which is to be used as a screening material in the doctorate degree examination.



4 Laboratory Rotation

“Global Internship Ⅰ” (3-6 months) and “Global Internship Ⅱ” (6-12 months) entail PBTS research at other universities, research institutes, companies, etc. The program provides financial support for overseas internships.

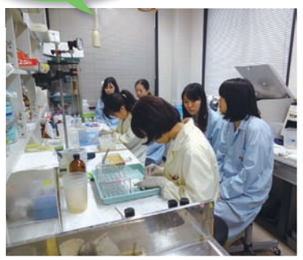
Photo Gallery of 2014

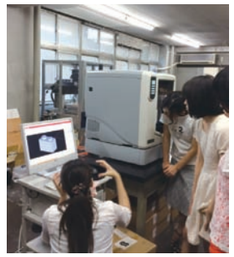
Spring

《 PBTS pre-Meeting 》

Summer

《 Laboratory rotation with advanced equipment 》





《 Presentation on PBTS Ⅰ》

Autumn

《 Event & Seminar 》

Winter

《 Extracurricular lesson
Visit to the socail welfare facility 》

《 Lecture scenery 》

《 Extracurricular lesson
Visit to Kabukiza 》

《 Briefing for Enrollment to the program 》

Overview of lectures offered by the program in 2014

Comments from the lectureres

Innovation Creation Fundamental Courses

Essential Mathematics for Global Leaders Ⅰ

Xavier Dahan

Project Associate Professor, Leading Graduate School Promotion Center

Due to the different backgrounds among the attendees who attended the course “Essential Mathematics I”, I was quite nervous and uncertain when I started it last October. How to make lectures that would at the same time satisfy attendees who haven’t done any mathematics for 4 years, and attendees who are majoring in mathematics or theoretical physics? On top of that in English? My idea was to talk about differential equations, which are ubiquitous in science since they allow to describe many evolutionary processes…maybe this could interest all the students! To engage attendees as much as possible I included several visual aids in PowerPoint slides, and Japanese translations of technical terms, as well as some practice exercises. Fortunately, students were responsive and attentive during the class. I am grateful to them for their behavior! To prospective students, this course would help you get familiar with mathematical terms in English and to review all necessary concepts to understand basic differential equations, which appear very often in science. No need to be afraid about difficulty nor by English!

Essential Computer Science for Global Leaders Ⅰ

Md. Khayrul Bashar

Project Associate Professor, Leading Graduate School Promotion Center

Students have learned important keywords and key-concepts of computer science (CS) in the Essential Computer Science (ECS1) course. Some students having non-CS background learned many new concepts about computer and CS. Some of the key concepts were (i) great insights and central questions of computer science, (ii) methods for data representation, arithmetic operation, and information storage (iii) computer architecture and machine instruction cycle, (iv) OS functions, booting, paging and virtual memory, (v)computer network, Internet architecture, addressing, and protocol, (vi) algorithm and problem solving steps, computer programming with examples, and (vii) Factors affecting computer performance.Motivated students have learned important keywords as well as some in-depth knowledge in CS. They are now in a position to modulate their earned knowledge for solving real world problems. .

Essential Chemistry for Global Leaders Ⅰ

Gary James Richards

Project Associate Professor, Leading Graduate School Promotion Center

When I was first asked to teach a chemistry course designed for students who are not chemistry specialists, I was not entirely sure what to expect in terms of how the students would manage. In addition, I was not sure how the students would cope with a course taught entirely in English, as I was not really familiar with their level. For these reasons, the course focused on the fundamentals of chemistry and I attempted to give the students a link between the fundamental science and real-world scenarios through some short reading assignments. I was pleased that the students seemed to be able to follow the lecture course in English with no major problems. Each lecture began with a few short review questions of the previous lecture’s topics and the students could usually give correct answers so it seems the material was not too challenging for them! I hope the course was successful in giving the students an understanding of basic chemistry and its relevance in the real world.

Essential Engineering and Technology for Global Leaders Ⅰ

Julien Tripette

Project Associate Professor, Leading Graduate School Promotion Center

In the class, we talk about technologies used for health promotion purposes. Together, we try to investigate whether video games, smartphone applications, new “mHealth”(mobile Health) devices can help people to have healthier behaviors. The recent emergence of these technologies indeed gives new options to health professionals. The IT industry starts to pay much more attention to the health and fitness market. My current research interests are also related to the usage of these new technologies for health promotion purposes. I wish to share my enthusiasm for the topic with the students, and why not, give them some ideas for orienting their research works or career toward this promising field. After one semester, some students over passed my expectations by conducting works that could be worthy of publication! During Essential Engineering and Technology for Global Leader- II, students will compete to build the best robot according to one theme. This class will allow the students to get some essential basics in robotics and to have a first experience in project management. I encourage all the eligible students from Ochadai, and not only those belonging to the Leading Graduate School Promotion Center, to take these classes. We all work together to build a secured learning environment where everybody can freely ask questions, express opinion and have fun. On a more personal note, I left France when I was 24 and I am abroad for 10 years. One of the most important components of my job is to exchange with the students about academic matters. The Center provides a perfect space to share our respective life experiences and interests and start to bridge the cultural gap between Japan and the rest of the world.

Essential Physics for Global Leaders Ⅰ

Tatsu Takeuchi **Associate Professor of Physics, Virginia Polytechnic Institute and State University**

Physics is a science that underlies all other natural sciences and many modern technologies. It is important to have a basic grasp of the field to understand the depth (or shallowness) of human knowledge regarding the Universe we inhabit, to appreciate the ingeniousness of various technological marvels we use in our everyday lives, and to be able to make informed decisions regarding various socio-economical issues that affect us all, e.g. whether nuclear power plants are really safe or not. Since I cannot cover all of physics in one course, I will only be lecturing on a small selection of topics. The hope is that the student will pick up the basic methodology of the field and many of the jargon so that she will be able to study other topics on her own when/if the need arises.

Essential Bioinformatics for Global Leaders Ⅰ

Sabine Gouraud **Project Associate Professor, Leading Graduate School Promotion Center**

Bioinformatics involves the use of computational tools/databases to generate biological knowledge and better understand living systems. Once fit enough to understand what is a real-life experiment, the students were offered a wet lab session focused on cDNA microarray, a high-throughput technique emerged about 20 years ago, that kept growing in popularity and has considerably improved the diagnosis of major diseases such as cancer and the development of various drugs. The microarray chip is a tiny solid surface printed with microscopic groups of thousands of known cDNA molecules that allows investigators to measure the level of gene activity for an entire genome. Then, they followed step by step the entire microarray process using very specialized equipment. Finally, they individually experienced the data analysis of a real experiment by using software that treats tens of thousands of gene expression data at a time and in a few minutes. Some students had never held a pipette in their life before the class, had no idea about the cost of the equipment and material. The expression on their face when they saw the “microarray chip” for the first time will stay printed in my memory forever: “How can this tiny and apparently simple piece of glass (the microarray chip) actually contain tens of thousands of cDNA and costs so much!?” Any student curious to learn about the new technologies that enable us to decipher progressively the complexity of the microscopic world governing our lives is encouraged to join. Learning by actively communicating and practicing in a friendly, international and global environment is the best way to learn and open your mind!

Global Leader Development Courses

Essential Ethics for Global Leaders

Yasushi Ishida

Project Associate Professor, the Center for Promotion of Global Human Resource Development

In this course, by overviewing and discussing ethical challenges posed by modern cutting-edge technologies and sciences, students are expected to learn ethically important concepts and master the ways of thinking that would be useful in discussing from ethical viewpoints modern sciences and technological developments. At the beginning of the semester, the students (science major students) seemed at a loss as to how to discuss these ethical issues in English; they tended to see things only from scientific viewpoints. After several classroom discussions, however, they could “go beyond” purely scientific understanding of the issues and started to realize their ethically controversial aspects. It is not easy to find ethical problems in society and discuss them even in Japanese. You have to do so in English in this class. But the efforts you make for the course certainly helps you develop your communication skills – organize your thoughts and express or convey your viewpoints – useful in many academic settings.

Essential History for Global Leaders
Essential Culture and Arts for Global Leaders

Midori Nishiura **Visiting Professor, Leading Graduate School Promotion Center**

Seventy Years after the W.W. II,
Japan’s Contribution to World Peace, and Considering the Future

My class is for students who wish to learn essential history, especially for those who aspire to be global leaders. We start by studying the importance and views of the historians before studying history itself. History can have as many variations or interpretations as the number of historians. But it is necessary to develop our own thoughts and form our own individual opinions on a case by case basis. This is to prepare the students for leadership positions in various fields. We learn, discuss and improve our debating and presentation skills, as well as negotiating techniques.

From 1997 to 2008, once each year, I lectured at the Sciences Po (Paris Institute of Political Studies) in France. The Institut d’Etudes Politiques de Paris, is a public research and higher education institution established in 1872, having educated many of France’s most important political leaders. It is considered to be one of the best schools for the social sciences, and includes political science, history, sociology and communication.

My style of teaching has always been to encourage two-way communication. I place particular emphasis on a roundtable forum, encourage debate, and develop interactive discussion skills. Today, the Science Po is no longer for French students exclusively. The brightest students, often with several language skills, come from all over the world. They are hungry to learn more, and I am always bombarded with a variety of questions from these high achievers!

Ochanomizu University has always aspired to provide students with an education which enables them to show true leadership with a global perspective. And that is the reason for my appointment as a visiting professor: to provide students with advanced studies and an education in leadership preparing them for a competitive international world.

I do hope to see you in my class!

Information

Entrance exam information

Entrance exam for the minor course of Science and Technology for Global Leaders, April 2015 semester

Date : One day only on February 19, 20, or 23, 2015
Venue : Room No. 126, 1 st floor of Inter-Faculty Building 3, Ochanomizu University
Notice of acceptance : February 27, 2015 on a website

Report of activities

January 21, 2015	Information session for prospective students
January 15 - 23, 2015	"Welcome Week": Individual meetings and consultations

Subject opening of a course information

October 6, 2014	Essential Mathematics for Global Leaders Ⅰ lecture by Xavier Dahan
October 7, 2014	Essential Chemistry for Global Leaders Ⅰ lecture by Gary James Richards
October 7, 2014	Essential Engineering & Technology for Global Leaders Ⅰ lecture by Julien Tripette
October 16, 2014	Essential Physics for Global Leaders Ⅰ lecture by Tatsu Takeuchi
November 19, 2014	Essential Bioinformatics for Global Leaders Ⅰ by Kei Yura,Khayrul Bashar,Sabine Gouraud, Yuki Yasumura,Atsuko Sato,Nathanaël Aubert-Kato
December 5, 2014	Essential Ethics for Global Leaders lecture by Yasushi Ishida
January 1, 2015	Essential Culture & Arts for Global Leaders lecture by Midori Nishiura

Scheduled activities

March 2015	Guidance and pre-seminars scheduled for new students

April 2015 Open Campus for Graduate School
April 18, 2015 in Ochanomizu University

back issue

No.1 (July,2014)

No.2 (Nov. 2014)

No.3 (Jan. 2015)

Editor's notes

This is the second year since the program started.
At first, the students seemed they had a hard time to catch up English, but they soon could learn speaking and working in English very well by taking PBTS and Essential classes.We hope they could lead new coming students who will join in this April.

About our logo "Bouquet"

The shape of the bouquet of flowers represents the educational system of this program. We place the pink flower in the center representing the major courses. Traditional education at graduate schools were designed to bring growth to only major studies, however we add the flowers around the center to show providing foundational strength and qualities to be a global leader. Our goal is to keep grow students' ablities as flowers are blooming like this logo.

Ochanomizu University

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

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