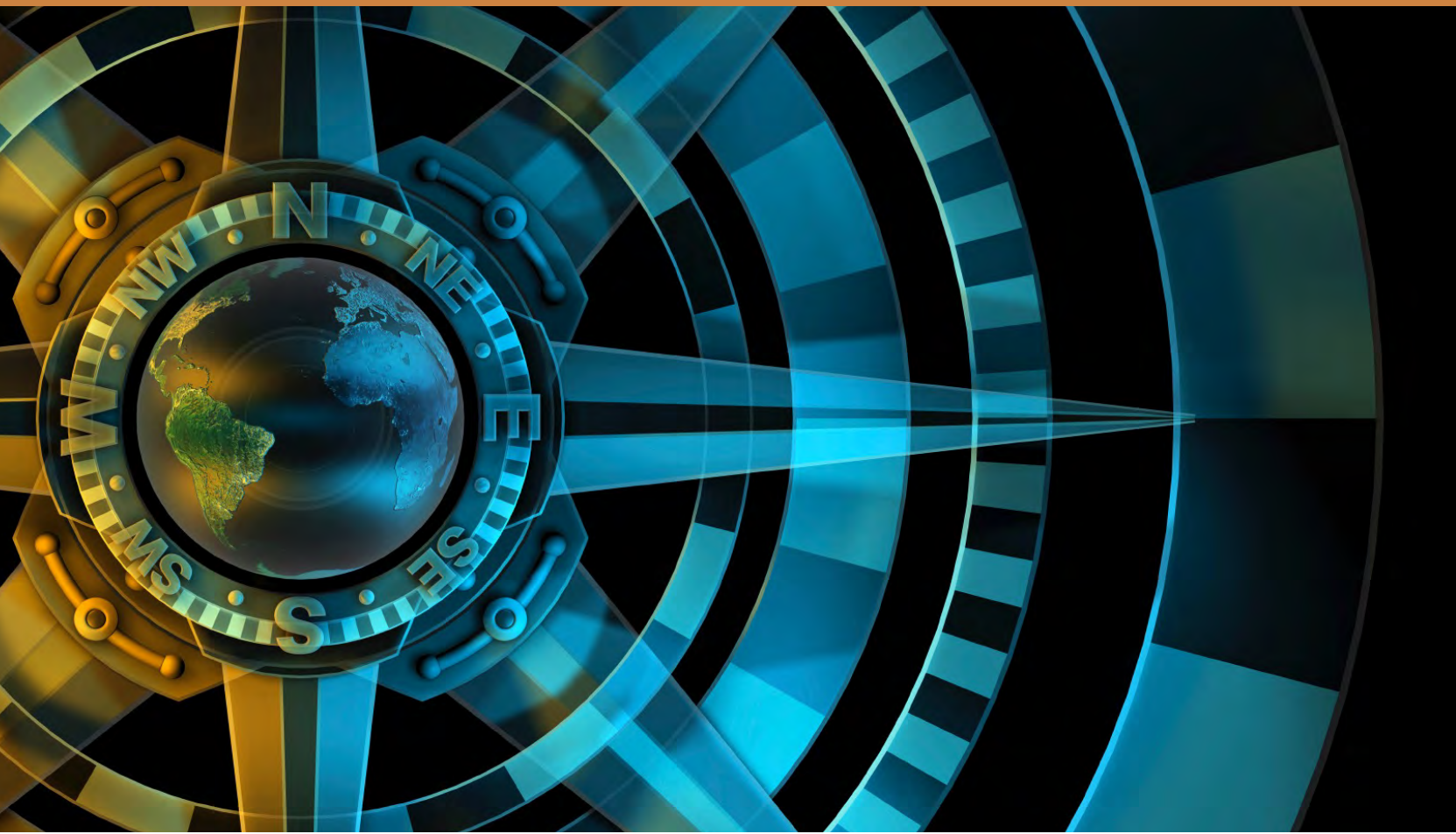


FrontierLab@OsakaU

*Scientific Empowerment Program for
International Students*






Scientific Empowerment Program for International Students

INTRODUCTION

Osaka University is at the forefront of technological innovation in Japan and is recognized as one of the leading science universities in the world. FrontierLab@OsakaU of Osaka University is a program designed to nurture **creative competency** in students by offering a wide range of potential research directions and emphasizing hands-on laboratory experience. It is specifically created for international students seeking to upgrade vital research and analytical skills. Applications from both undergraduate and graduate science and engineering majors are welcome.



Why FrontierLab@OsakaU?

Close Supervision by Top Scientists in the World

Osaka University has long been recognized for its world-class research output and quality training for up-and-coming researchers. Each participant in the FrontierLab Program will be assigned to an internationally renowned research group, and thematic studies will be conducted under the close supervision of the faculty who are top in the field.

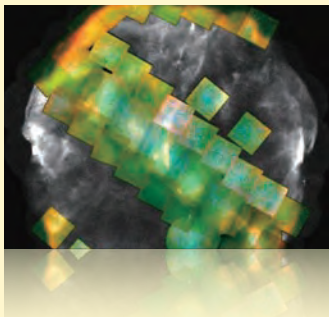
Interactive and Experiential Learning

FrontierLab@OsakaU characterizes itself with small group discussions and one-to-one supervision by faculty, which enable participants to experience interactive and experiential learning. Participants select a topic from basic to applied to the most challenging and cutting-edge and conduct experiments through peer consultation, group work and interactive discussions.

Learning in the Community of Practice

The Japanese tradition of the spirit of creation is very much alive in the frontier research laboratory. Participants will have a first-hand experience of the Japanese spirit of invention and breakthrough through laboratory experiments at Osaka University.

***Hands-on
Experience of
Internationally
Renowned
Science and
Technology
Fields***



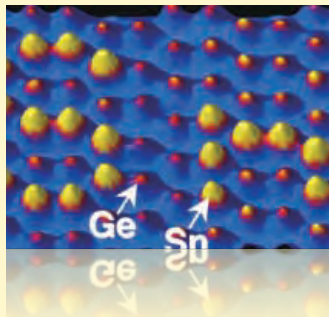
Science

The Graduate School of Science continues its research policies that focus on a liberal, lively spirit and creativity unencumbered by old conventions. The School includes a variety of disciplines, as can be seen in diverse departments such as Mathematics, Physics, Chemistry, Biological Science, Macromolecular Science, and Earth and Space Science. To meet the needs of society and industry, the School of Science is not only concerned with fundamental research studies but also with practical applied research studies.



Engineering Science

The main objective of the Graduate School of Engineering Science is to develop scientists with a keen interest in practical technology, and engineers who have a firm grasp of the basic sciences and may use this expertise to create new technology. The School consists of departments such as Materials Engineering Science, Mechanical Science and Bioengineering, and Systems Innovation.



Engineering

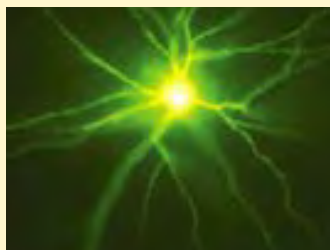
The Graduate School of Engineering boasts a history of more than 100 years, and has sent many students into society who are now playing a leading role in various fields of academy and commerce both within and outside the country. The Graduate School consists of 10 divisions and the School of Engineering has 5 divisions, covering fields such as Biotechnology, Adaptive Machine Systems, Sustainable Energy and Environmental Engineering, Applied Chemistry, Mechanical Engineering, Electrical and Electronic Engineering, Materials Science, Ocean Engineering, Architectural Engineering and Civil Engineering. To harmonize nature and human beings, and to contribute to the creation of a safe society, the Graduate School aims to “produce, raise and transmit wisdom” and “contribute to society” based on the excellent wisdom.



Information Science & Technology

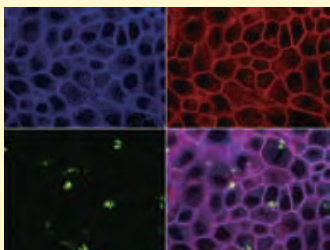
The advanced information society rapidly takes shape in the 21st century, paving the way for people to engage in a much wider range of social activities. To meet social demands, the Graduate School of Information Science and Technology was established in April 2002, consisting of 7 departments: Pure and Applied Mathematics, Information and Physical Science, Computer Science, Information Systems Engineering, Information Networking, Multimedia Engineering, and Bioinformatic Engineering. The School has been performing various activities and working actively to forge closer cooperation between the industry and academia and has been utilizing our research and development results for the betterment of society.

Participating Schools



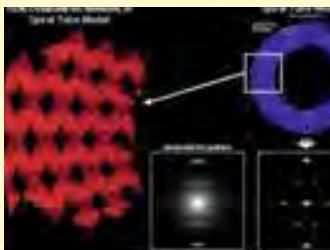
Frontier Biosciences

Graduate School of Frontier Biosciences is dedicated to advancing forefront of life sciences, aiming to nurture students and scientists in our active research environment so that they become fully equipped for taking biosciences to the next height. Established in April 2002, the school has assembled top-level researchers and educators who are experts in a wide range of disciplines, including medicine, biology, physics, and engineering.



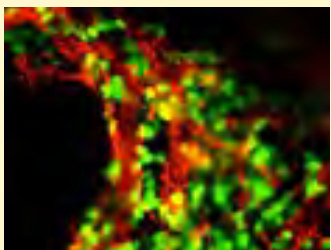
Medicine

Graduate School of Medicine produces numerous world-acclaimed research results, as well as outstanding researchers. Also, it produces the largest number of published papers in Japan and submits a substantial number of papers to renowned scientific magazines. The number of contract research, joint research and donation for research and education from private companies accorded to the school being among the highest in Japan.



Institute of Scientific and Industrial Research

ISIR was founded in 1939 on the basis of strong desire and the support of the business circles in KANSAI area. In order to perform our important mission, we started to construct the Nanotechnology Incubation Building. It is the first case of the on-campus Nanotechnology incubation facility in Japan. ISIR plays a major role in the inter-university institutes alliance projects and international collaboration, contributing to the exchange of ideas and discussion with people outside the Institute.



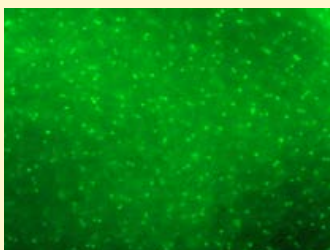
Research Institute for Microbial Diseases

The Research Institute for Microbial Diseases was established in Western Japan in 1934 as a five-department Research Center for Communicable Diseases. The Institute's outstanding track record led to the addition of the Research Center for Emerging Infectious Diseases in 1997. Today, the Institute has grown to include nineteen departments spanning diversified subjects and to train Master's and Ph.D. candidates in the medical and biological sciences.



International Center for Biotechnology (ICBiotech)

International Center for Biotechnology (ICBiotech) is dedicated to promote international cooperation among Asian countries in the aspects of research and educational advancement in the field of Biotechnology by propelling academic interactions in Asian countries. The research projects revolve mainly on the development and utilization of biological functions, the optimization of bioconversion processes, and the conservation of genetic resources.



Research Institute for Protein Research

The Institute for Protein Research (IPR) was founded as a joint-use research organization attached to Osaka University to play a central role in protein science in Japan. Emphasis was laid on studies on the structure and function of proteins and their biological significance at the molecular level, as well as investigations at the cellular level. Although IPR started as a domestic center, it is now widely recognized as an international center of excellence for protein research.



Research Center for Nuclear Physics

Research Center for Nuclear Physics (RCNP) of Osaka University is the national research center for nuclear physics and has been producing outstanding results in the field of nuclear physics. The facilities are used for the worldwide collaborations to perform the physics of the subatomic world, the typical length scale is 10 to the minus 15th meter. Our facilities were constructed for the study of nuclear physics but are also open to all researches which require the facilities.



Institute of Laser Engineering

The Institute of Laser Engineering (ILE) is a pioneering research institution of the study of "High Energy Density Physics". The research conducted at the ILE includes a wide range of research fields, such as laboratory astrophysics, generation and application of electromagnetic radiation ranging from terahertz radiation to gamma rays, and relativistic nuclear science. The ILE's research findings contribute to high-tech industries such as semiconductor production using laser-produced extreme ultraviolet (EUV) light.

Participating Schools & Institutes

Challenges and Aspirations: Voice from the Participants



*Priyanka SONI
Nitinkumar*
Home University:
California University
of San Diego
Assigned Laboratory:
Department of Frontier
Biosciences, Graduate
School of Frontier
Biosciences

Interested in Prof. Akihito OGURA's work for a long time, Priyanka was looking for a way to study at his laboratory. When she found out about FrontierLab@OsakaU, she took the initiative to contact a coordinator of the international office and became the first student from her university to join the program.

Co-Authorship in the High-Quality International Journal

"What I loved about this program is learning how to read scientific papers in order to apply up-to-date information to my research." By experiencing close supervision and conducting hands-on research in FrontierLab@OsakaU program during the spring of 2009, Priyanka contributed to the publication of an article in the *Journal of Neuroscience Research* in December 2010 as one of the authors. <http://onlinelibrary.wiley.com/doi/10.1002/jnr.22505/full>

*Priscille
DREUX*
Home University:
National School of
Chemistry and
Engineering Science
of Paris
Assigned
Laboratory: Applied
Chemistry, Graduate
School of
Engineering



Priscille won the first prize at the final presentation of FrontierLab@OsakaU, held on July 30, 2009. With her improved research skills and cross-cultural experiences, she landed a job in a major Japanese company in Belgium, which she started in September 2009.

Advancing Research Skills

"I was able to enhance my knowledge about my research field and improve research skills by devoting myself to experiments. Preparing for the final presentation was also a great learning experience. It was a challenge for me to condense my research into ten minutes and simplify it in order to explain it to the audience with a completely different research background. In particular, when I was asked a question, I could view my research from a very different perspective. It made me think more of the big picture, and how to make my research accessible to a different range of people."



*Fabio DALLA
LIBERA*
Home University:
University of Padova
Assigned Laboratory:
Department of Systems
Innovation, Graduate
School of Engineering
Science

Fabio came to Japan through an inter-lab exchange program between a lab in Osaka University and the lab in University of Padova, his home university. He loves to watch Japanese animation, in particular "Gundam" – a world-famous Japanese anime classic. It is partly the reason why he fell in love with robotics.

Hands-on Experience with Cutting-edge Science as well as Japanese Culture

"The best thing about this program is that it offers hands-on experience in both academic and cultural settings. I have been very interested in Japanese culture, especially Japanese animation, ever since high school, and I started to learn the Japanese language. I think that you will never be able to know the true essence and real spirit of things, unless you actually do them or experience them. Osaka University provided me that opportunity by offering me a lively, vibrant Japanese culture and state-of-the-art science."

Mun-seok PARK
Home University: Seoul
National University
Assigned Laboratory:
Department of Systems
Innovation, Graduate
School of Engineering
Science



As an undergraduate, Mun-seok first studied Electrical Engineering for two years and then Management for another two years. He found himself interested in Financial Mathematics, and Osaka University gave him an opportunity to fuse his knowledge in two areas to a new, ambitious field of study.

Wholesome Experience

"My personal impression is that the level of Japanese undergraduate students is no lower than that of the graduate students. I believe specialized, intensive course work and personal guidance by the professor make the level of students in Japan high.

I started to learn the Japanese language after I came to Japan, and one month before going back to my country, I reached a level that would allow me to take the first level of the Japanese Language Proficiency Test. FrontierLab is a wholesome experience!"

Different Labs, Shared Experiences: Feedback from the Participants



Sutima CHATRA BHUTI

*Home University: Chulalongkorn University
Assigned Laboratory: Department of Applied Chemistry,
Graduate School of Engineering*



Jian HUANG

*Home University: Shanghai Jiao Tong University
Assigned Laboratory: Department of Mechanical Science and
Bioengineering, Graduate School of Engineering Science*



Yuumi MIYAZAWA

*Home University: University of California, San Diego
Assigned Laboratory: Department of
Biological Sciences, School of Science*



Rafal NOGA

*Home University: University of Valladolid
Assigned Laboratory: Department of
Systems Innovation, Graduate School of
Engineering Science*



Chia Fen TSAI

*Home University: National Chiao Tung University
Assigned Laboratory: Department of Applied
Chemistry, Graduate School of Engineering*

Strong Support and Supervision

Strong Support: "It took just two days to be prepared for joining the research lab after the arrival. It was easy to come here, without worrying much about a visa, accommodation and all the others!" **Small Size Classes:** "Everyone knows each other well. In classes, lecturers have more conversation with students, so I take less notes. Class is more of talking rather than listening." **Efficient Way of Supervising:** "Japanese professors are different in that they give student more time to proceed with their own work. I can bring my data to my supervisor, when I am ready, to get some comments. That way, I know whether I am on the right track."

Excellent Research Opportunities

Working with a Well-known Researcher in the World: "I came here to be able to work closely with the supervisor at Osaka U, who is an expert in my field. He is teaching me everything I need for my research!" **Easy Access to High-Tech Facilities:** "In Japan, all facilities and machines necessary for advanced research are more easily accessible to students. Very convenient!" **Strong Theoretical Support for Ph.D Dissertation:** "Doing simulation in Japan gives a strong theoretical support for my experimental results. I have already acquired good results for my paper."

Exposure to New Culture and Language

Discovering Something New Every Day: "Japan for me is like landing on Mars. Very different society. I discover something new every day!" **Love the City of Osaka!** "Great opportunity to be exposed to another culture, completely different educational system and different people around the world. More than anything, I like the city of Osaka!" **A Chance to Learn a Local Language:** "I was thinking, why do I have to go to America or Europe? I already speak English. I would instead choose another country where I cannot speak a local language. When you overcome that language difficulty, you feel a sense of achievement."

Love to Come Back to Japan!

After this program: "I will put all the results together based on simulations that I work on here and get a Ph.D. degree, and then I would like to come back to Japan!" **Broadening My Mind:** "I did not know exactly what the research was before I came here. But after being exposed to sharing ideas with other classmates, I have more visions for the next step now, including coming back to Japan."

Program



The FrontierLab@OsakaU Program is a student exchange program for international students from Osaka University's partner universities which have mutual tuition waiver agreements.

FrontierLab@OsakaU offers students an opportunity to work with researchers who are at the cutting edge of research. Participants in this program will be assigned to a particular research group in one of Osaka University's internationally renowned science and technology fields where they will learn thematic studies under the guidance of faculty. Research fields of Osaka University can be found below.

<http://www.dma.jim.osaka-u.ac.jp/search?m=home&l=en>

1. Type of Study

Study Plans

- a. "Special Auditor" (Credit-based research)
 - i. Applicable for either undergraduate student or graduate student
 - ii. Fixed exchange period (semester based)
 - 1 semester (15 weeks): From Late September to February, or from April to August
 - 2 semesters (30 weeks): From Late September to August, or from April to February
 - iii. Applicant will participate in credited supervised research, and have an option to take other credited courses.
- b. "Special Research Student" (Non-credit basis research)
 - i. Applicable only for graduate student
 - ii. Flexible exchange period (three months to full academic year)
 - iii. Applicant will participate in supervised research but not in course works that will grant credits.

2. Language of Instruction

English or Japanese

3. Academic Calendar

For details specific to each academic year, refer to the university website;

<http://www.osaka-u.ac.jp/en/campus/calendar.html>

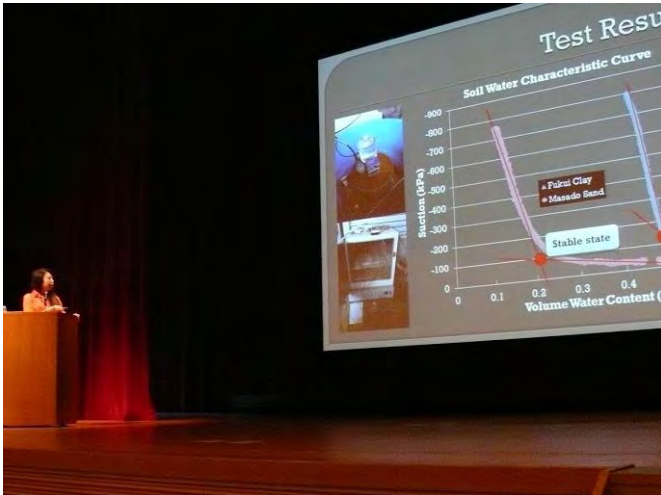
Overview of FrontierLab@OsakaU Program

New students orientation	Fall Intake: Late September Spring Intake: Early April
Fall Semester starts	October 1st
Year-End/New Year break	Late December to Early January
Fall Semester Final Presentation	Early February
Spring break	Mid-February to End-March
Spring Semester starts	Early April
Spring Semester Final Presentation	Early August

Research Achievements

The Final Oral Presentation

The FrontierLab@OsakaU Final Presentation is held twice a year in February and August. FrontierLab@OsakaU students give an oral presentation of their research project for 10 minutes in English in the end of their program. The students are expected to join this final presentation and actively participate in the Q&A session.Each presentation is graded by FrontierLab@OsakaU program coordinators and supervisors based on the following criteria: contents, logical and analytical strength, presentation skills, and response to questions. The best three presenters will receive best presentation awards given by Executive Vice President of Osaka University.



<Past Final Presentations>

Final Presentation Title	Home University	Host School/ Graduate School	FrontierLab Supervisor
Visualization and destruction of cancer cells by multicolour photosensitizing proteins	University of Groningen, The Netherlands	Frontier Biosciences	Prof. Takeharu NAGAI
Kinetic and thermodynamic characterization of PaSDSA1 sulfatase	Universidad Nacional Autónoma de México, Mexico	Institute for Protein Research	Prof. Yuuji GOTOU
How to make an animation with 3D models manipulation without traditional timeline	National Tsing Hua University, Taiwan	Information Science and Technology	Prof. Haruo TAKEMURA
Comparing Strengthening Mechanisms of Vapor Grown Carbon Fiber vs. Titanium Carbide Reinforced PM Titanium Metal Matrix Composites	University of California, USA	Engineering	Prof. Katsuyoshi KONDOH
Damage and non-damage simulation of a residential fill slope during the past large-scale earthquakes	RWTH Aachen University, Germany	Engineering	Prof. Kenichi TOKIDA
Functional analysis of HNF4A and its co-factors in hepatic differentiation from human iPS cells	University of California, USA	Pharmaceutical Sciences	Prof. Hiroyuki MIZUGUCHI
Thermodynamics of Histone-like Protein	University of California, USA	Science	Prof. Seiki KURAMITSU
Combined treatment therapy of Interleukin-2 and regulatory T cell depletion in murine melanoma and renal cell carcinoma models	Technische Universität München, Germany	Medicine	Prof. Shimon SAKAGUCHI
Oxidation of Cu3Au(111) surface by HOMB examined with SR-XPS	University of Jyväskylä, Finland	Science	Prof. Michio OKADA
Labeling proteins with 19F to investigate interactions	Goethe-Universität Frankfurt am Main, Germany	Science	Prof. Toshimichi FUJIWARA
How to Perceive the Human Presence and Make Robots More Smart	National Taiwan University, Taiwan	Engineering Science	Prof. Hiroshi ISHIGURO
Facial imitation between human and robot using human face geometry properties	Pierre & Marie Curie University, France	Engineering	Prof. Minoru ASADA
Estimation of HVAC energy saving potential in San Diego apartment units through passive solar shading	University of California, USA	Engineering	Prof. Yoshiyuki SHIMODA
Joining of Copper Plates By Unusual Wetting on Laser Irradiated Surface Crevice Structure	University of California, USA	Engineering	Prof. Toshihiro TANAKA

Syllabus and Student Workload

For your creative competency and more chances for hands-on experience

Objective
 FrontierLab@OsakaU is a program designed to nurture creative competency in international students by offering them opportunities for learning in communities of research practice. The emphasis is on hands-on laboratory experience in a wide range of potential research directions. It is specifically created for international students seeking to upgrade vital research and analytical skills in the fields of Nanotechnology & Molecular Science, Life Science & Biotechnology, Systems & Robotics, Computing & Information Science, Advanced Material Science, Photon Science and other relevant fields.

- As study outcomes, students should be able to:
- Understand research backgrounds and relevant theories;
 - Acquire basic laboratory techniques relevant to their field of study;
 - Formulate a research plan, implement it by conducting experiment-based research, and convey the results in scholarly presentations.

As the basis for continuous development of research skills, FrontierLab@OsakaU also aims at cultivating in students the ability to:

- Give constructive criticism by sharing ideas, data and findings with laboratory supervisors and peers through group work and peers cooperatively;
- Enhance independent research capabilities;
- Prepare research reports by assessing progress and describing accomplishments and failures of the research project.

Program Description & Grading Policy
 Each participant in the FrontierLab@OsakaU Program will be assigned to a particular research group in one of Osaka University's science and technology fields. Thematic studies will be conducted under the close supervision of the faculty through experiments, peer consultation, group work and interactive discussions. Students will select one of the FrontierLab A, B, C and D courses with the total student workload ranging from 350 to 750 hours/semester. The four courses all emphasize laboratory/research experience for students

and set the contact hours in the laboratory at between 180 to 420 hours/semester depending on the course. This accounts for more than 50% of the total workload. The program also sets independent study hours for revision/review at 90-210 hours/semester, 6-14 hours/week to read assigned texts and research papers, analyze research data, and prepare for the laboratory research report to be presented to the supervisor at the end of the program. The amount of assignments and preparation time depends on the assigned laboratory and the field of study. Students will receive a combined grade for contact hours (laboratory time), seminar, oral presentations and written report. Each element is considered essential to their success in the program.

Contact Hours: As the assessment of the level of understanding of laboratory procedures and proficiencies will form a basis for the overall grade, students are expected to consider the stated contact hours as a minimum requirement. Through group discussions and exchange of opinions, students are expected to develop their own ideas and formulate specific research plans.

Seminar Presentation and Participation: There will typically be a single seminar per week and seminar presentation/participation is essential for student grade. Good presentations as well as active participation in seminars are critical in acquiring a broad base of knowledge and further developing analytical skills. Failure to present/participate in seminars on a regular basis will lower the grade. Individual tutorial, either on a regular basis or otherwise, may be available or required.

Oral Presentations: Students are expected to carry out three oral presentations (or two in the case of students studying for a short period such as three months) during the study period. By giving three presentations, students will be able to integrate ideas and analyses on laboratory results into creative and academically coherent work. The final oral presentation will be attended and evaluated by FrontierLab@OsakaU coordinators and supervisors as part of a university-wide program.

Written Report: Submission of laboratory reports at the end of student participation in the program is required for successfully passing the course.

< Credits and Study Hours per 1 semester(15Weeks) >

		1 semester (15 weeks)		2 semesters(30 weeks)	
Course Name		FrontierLab C	FrontierLab D	FrontierLab E	FrontierLab F
Credits at Osaka University		10	14	20	28
FrontierLab@OsakaU Study Hours	1. Contact Hours(Laboratory time)	300	420	600	840
	2. Preparation Hours for Presentation	30	40	60	80
	3. Supervised Study (Meeting with a faculty supervisor)	15	20	30	40
	4. Tutorial (Supplementary advice from senior students)	30	30	60	60
	5. Participation in Seminar	15	20	30	40
	6. Independent Study Hours	150	210	300	420
	7. Other Laboratory Activities	10	10	20	20
Total Student Workload		550	750	1100	1500
Student Workload ECTS Equivalent (25hrs ≈ 1ECTS)		22	30	44	60

NOTE: Numbers indicate hours per 1/2 semester(s) . Contact hours in FrontierLabC/D/E/F per day on the average will be from 4.0 to 5.6 hours for each course. The ECTS-compliant workload table is provided to facilitate credit transfer between Osaka University and partner institutions. Osaka University's credits are awarded based on "contact hours (laboratory time)" stipulated under item "1" of the above. The other study hours written under items "2" to "7" are estimates that depend on discipline, school/department, and laboratory.

Prerequisites

Undergraduate students are required to have completed at least two years of study before participating in the FrontierLab@OsakaU program. Both undergraduate and graduate students in science, engineering and other relevant fields are required to have completed science and/or engineering foundation courses.

Crediting

Six to 14 credits/semester, an equivalent of 14-30 credits in ECTS unit will be awarded upon successful completion of the requirements.

Grading

- Oral Presentation 40%
(Introductory 10%, Mid-term 10%, Final 20%)
- Seminar Presentation/Participation 20%
- Written Laboratory Report 40%

Assessment of the Contact hours in the laboratory will comprise the general basis for grading.

Score Assessment

S	90 points and above
A	80 points to 89 points
B	70 points to 79 points
C	60 points to 69 points
F	59 points or below

Textbooks

No specific textbook is required for the program but is instead left to the discretion of the individual laboratory supervisor.

Course Options and Estimated Workload

(Special Auditor only)

FrontierLab@OsakaU program offers four credited courses for students who participate in semester-based study programs. While "FrontierLab D" requires a full workload (750 hours per semester and 50 hours per week), students who register for courses A, B, or C may take other courses offered either in English or Japanese. Each FrontierLab course awards 6 to 14 Osaka University credits, while lecture courses such as "International Exchange Subjects" offer 2 credits per semester.

Many FrontierLab supervisors may require "Course D" registration for students to achieve satisfactory outcomes from laboratory experiences. Students are thus advised to consult with their supervisors prior to course registration to discuss individual lab requirements and study needs in other areas.

Description of Study Hours

1. Contact Hours

Contact hours or laboratory time is time students spend in the assigned laboratory. During contact hours, students conduct activities related to experiments with their supervisors and other members of the laboratory. To achieve FrontierLab@OsakaU program goals and objectives, which emphasizes hands-on laboratory experience, the contact hours are set at between 180 and 420 hours/semester depending on which of the four courses options is being pursued. This accounts for more than 50% of the total workload. Through these contact hours, students are expected to acquire basic laboratory knowledge and techniques to conduct actual research.

2. Preparation Hours for Presentations

During the preparation hours for presentations, students are expected to prepare for three oral presentations, which the program sets as compulsory activities. In the introductory, mid-term and the final oral presentations, students are expected to display their understanding of basic theories in their discipline, demonstrate the

ability to come up with solid research proposals, and analyze experimental results. They are also expected to show an ability to integrate ideas and laboratory research results into creative and academically coherent works. Preparation time includes producing PowerPoint, handouts and other visual aids for use in the presentations.

3. Supervised Study (Meeting with a faculty advisor)

Supervised study enables students to discuss the progress of their research with supervisors. This close supervision by members of the faculty provides an opportunity for students to ask questions and receive constructive feedback about their research projects. Students may also be given assignments by their supervisors. The close contact with "Frontier" scientists is one of the most important aspects of the program.

4. Tutorial (Supplementary advice from senior students)

Tutorial is a time for peer consultation and group work with the laboratory members, during which time senior students often instruct and mentor their junior counterparts. Students are encouraged to discuss results obtained in their own experiments with peers to receive feedback, while providing a similar type of feedback at the work of others. Tutorial provide students opportunities to learn in a community of research practice, to motivate and learn from each other, and to be a competent and responsible member of a cooperative research team.

5. Participation in Seminar

Students are expected to participate in a seminar usually conducted once a week for 90-120 minutes. Well-prepared presentations and active participation are required to acquire a broad knowledge base and develop analytical and critical thinking skills.

6. Independent Study Hours

Students are expected to study without supervision or direction from others during independent study hours. Activities include reading assignments and relevant papers, analyzing research data and preparing for the laboratory research report to be submitted to the supervisor at the end of the program.

7. Other Laboratory Activities

The other laboratory activities are those offered by the assigned laboratory which are not categorized in the above mentioned student workload. These will vary in nature depending on the laboratory. These may include activities in the communities of research practice that enable students to communicate and interact more effectively with other students and acquire intercultural communicability.

Transfer of Credits

Students will be graded on the basis of laboratory work, participation in seminars, oral presentations and reports. Participants in courses FrontierLab@OsakaU A, B, C and D will be awarded credits by the School/Faculty at which the student is enrolled upon successful completion of each course. Osaka University will issue an academic transcript to the student's home university. For students enrolled in non-credited FrontierLab@OsakaU program, a Certificate of Completion, signed by the Executive Vice President and Chief Coordinator will be issued.

How to apply to FrontierLab@OsakaU

Eligibility, deadlines, scholarship

1. Eligibility

Both undergraduate and graduate students in science, engineering or other relevant fields who are registered at universities that share a student exchange agreement with Osaka University.

Undergraduate students are required to have completed at least two years of study before participating in the FrontierLab@OsakaU program.

FrontierLab@OsakaU requires adequate language proficiency in either English or Japanese.

English: TOEFL iBT 80/IELTS 6.0 or higher *

Japanese: JLPT N2

*Must be able to give a research presentation in English.

2. Method of Application

Prospective students should contact the exchange coordinator or international office for application information.

3. Application Deadline

Fall Semester Enrollment: End-March

Spring Semester Enrollment: Late October

4. Tuition

Tuition is waived for students from universities which have a formal exchange agreement on tuition waiver with Osaka University.

5. Scholarship

Successful applicant may be eligible to apply for JASSO (Japan Student Services Organization) Scholarship and Osaka University Incoming Exchange Scholarship (80,000JPY/month). Number of scholarship awards varies by semester and year.

6. Accommodation

Osaka University will book a university accommodation for participants in or near the campuses.

7. Visa Information

Before coming to Japan, accepted students need to obtain a “Student (Ryugaku)” visa, issued by the Japanese Embassy or Consulate in their country of residence. The Support Office for International Students and Scholars of Osaka University will assist with the visa application process.



Contact

International Student Affairs Division, Osaka University

1-1 Yamadaoka, Suita, Osaka 565-0871 JAPAN

Phone: +81-6-6879-4026

Email: exchange@cice.osaka-u.ac.jp

Program web page:

http://www.osaka-u.ac.jp/en/international/inbound/exchange_program/frontierlab

University website:

<http://www.osaka-u.ac.jp/en/>

Schools/Graduate Schools/Institute participating in the FrontierLab@OsakaU Program

School/Graduate School:

Science, Medicine, Pharmaceutical Sciences, Engineering, Engineering Science,
Information Science and Technology, Frontier Biosciences

Research Institute:

Research Institute for Microbial Diseases

Institute of Scientific and Industrial Research

Institute for Protein Research

Joining and Welding Research Institute

International Center for Biotechnology

Research Center for Nuclear Physics

Cybermedia Center

Institute of Laser Engineering

Immunology Frontier Research Center

Cultural backgrounds of the program

A blend of tradition and innovation

Spirit of Creation

The FrontierLab@OsakaU Program reflects the tradition of Osaka University, which has long been recognized for its world-class research output and quality training for up-and-coming researchers. This is achieved in myriad ways but most recognizably in a sustained commitment to the integration of basic science with applied fields of study and the early introduction of laboratory experience so as to nurture the spirit of innovation and breakthrough. Many Japanese university laboratories, at least in the fields of science and engineering, still possess a traditional style of teaching and collaborative learning, and often offer opportunities for training in leadership and collaboration with others. This approach can be called "learning in the communities of research practice."

This emphasis on practical skills, even in the modern university laboratories, originates in the history of Japan. Respect of "craftsmanship" - the Japanese tradition of "monozukuri" or the "spirit of creation" in other words, is still very much alive in the cutting-edge research laboratories today.



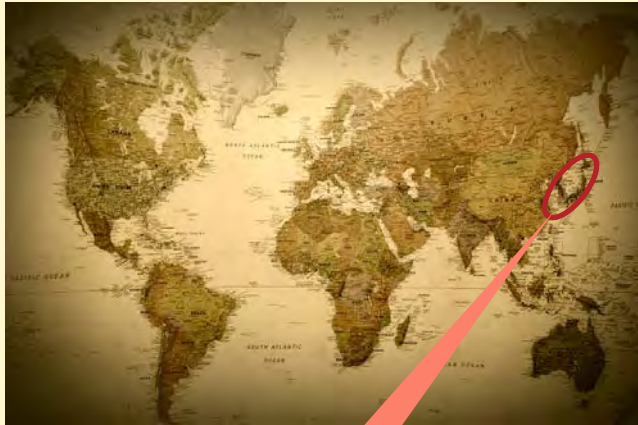
Osaka University

Osaka University is recognized as one of the leading research universities in the world and at the forefront of technological innovation in Japan. Its strong orientation toward innovation, partnership with the local community and industry, and pioneering efforts in interdisciplinary research and education, all reflect the university's unique history and characteristics.

Osaka University traces its beginnings to the Edo Period, to the foundation of Tekijuku in Osaka in 1838. Reaching further back, scientific and educational development in Osaka was enhanced by the establishment of Kaitokudo in 1724 by five local merchants. Osaka University takes pride and inspiration from these two educational institutions, not founded by Japanese feudal lords but by local citizens. Both Tekijuku and Kaitokudo pursued scientific truth and knowledge while cultivating virtue and socio-cultural awareness in students.

In 1931, the University was established as Osaka Imperial University, relatively late among seven other Imperial Universities. It has grown rapidly in these 80 years, not only in size but also in terms of its contributions to the scholarly community. It is now a comprehensive research university with 16 graduate schools, 11 undergraduate schools, 5 research institutes, 3 national joint-use facilities, 21 joint-use facilities, 2 hospitals, and 4 libraries on 3 campuses of Suita, Toyonaka, and Minoh. As of May 1, 2014, 2012 international students studied at Osaka University out of a total of about 25,000 students. Osaka University takes pride in being a first-class university in both domestic and international settings and is committed to make contributions to society, based on the University's motto "Live Locally, Grow Globally."





Osaka on the
World Map



*Information published in this brochure is subject to change.
Please check the latest information at the following website.
http://www.osaka-u.ac.jp/en/international/inbound/exchange_program/frontierlab
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