OSAKA UNIVERSITY — PROSPECTUS 2011

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80 2011
OSAKA UNIVERSITY

Message from the President

Live Locally, Grow Globally — establishing the "Osaka University style" —

The meaning of Osaka University's motto "Live Locally, Grow Globally" goes beyond the historical significance of the university's roots that reach back to **Kaitokudo**[1] and **Tekijuku**[2]. Kaitokudo and Tekijuku were not only places of learning open to the public, they were also schools possessing cutting-edge knowledge in their day, places of unimpeded study for citizens. The inspirational spirit of Kaitokudo and Tekijuku exemplifies the future course for Osaka University, an institution imparting "knowledge" both locally and globally.

Osaka University has always emphasized: (1) Cutting-edge research, (2) a university tradition of combining and creating overlooked areas for research, (3) an atmosphere revering both learning and research (which is why we have been called a "University of Education"), (4) respect for a liberal arts education at our graduate schools, and (5) active contributions to society through university-industry and university-society cooperation. Now is the time for the University to embrace this unique education and research style as the definitive "Handai style [Osaka University style]."

Osaka University strives to nurture researchers and professionals engaged in cutting-edge research, doing so with the full trust of society. In other words, we aim to produce graduates with a comprehensive worldview that incorporates the power to design and communicate with others. Centering on these characteristics and looking to the future, Osaka University dedicates itself to become a university looking ahead as times change; not a university only for one nation or only for researchers, but a university walking forward in harmony with the citizens of Osaka and the world. This is the style of "knowledge" we aim to impart. Osaka University's staff, students, researchers join hands to build such a university, and the finest evaluation we can receive is when society looks and says, "People who've studied at Osaka University really are one step ahead."

K. Washida

WASHIDA Kiyokazu
President, Osaka University

Footnotes:
1 Kaitokudo, a *gakumonsho* [a place for study], was founded in 1724 by citizens of Osaka.
2 Tekijuku, a *gakumonsho* [a place for study], was opened in 1838 by OGATA Koan, a prominent medical doctor.

CONTENTS

The Past and Present of Osaka University

Osaka University roots can be traced to Kaitokudo and Tekijuku, two academies that delivered front-line scholarship during the Edo period (1603 -1867). Osaka University continues to achieve cutting-edge research results worthy of great pride and international recognition and to provide society with distinguished researchers and professionals.

Kaitokudo: An academy founded and operated by merchants for merchants

Kaitokudo was an academy founded in 1724 by five Osaka merchants. The academy was officially recognized by the Edo Shogunate in 1726, but its operations centered on merchants even after 1726. The academy frequently welcomed brilliant scholars, and flourished as a base for a network of knowledge throughout western Japan. At Kaitokudo, neo-Confucianism was taught predominately. While fundamentally teaching a sect of government learning (orthodox neo- Confucianism authorized by the Edo Shogunate), strong points from other various ways of thinking were also flexibility assimilated. An academic culture overflowing with independent and critical thinking was freely conceptualized, and many achievements were attained in the field of natural sciences.

Written on the walls of the entranceway to Kaitokudo is "Relationships between students should not be determined upon rank or wealth, for all are equal" Furthermore, the mutual independence of scholars was greatly encouraged by the school. This liberal academic culture answered the desire for learning in many people, from large-scale store owners to regular employees, and heightened the culture of Osaka.

The Stone Monument of Kaitokudo

OGATA Koan, the Founder of Tekijuku

Tekijuku: A place of learning that produced talented people who contributed to the modernization of Japan.

The Edo Shogunate, from the standpoint of guaranteeing the safety of the nation, cut off all trading with European nations from 1639, with the exception of Holland, and prohibited trafficking with the outside world. From then on, through connections with Holland, all studies, culture, and techniques introduced to Japan from Europe were called Dutch studies. They were highly valued and constitute the foundation of modern Japanese science.

Tekijuku was opened in unison with a local medical clinic in 1838 by OGATA Koan, an able Dutch-versed physician and the leading expert in introducing Dutch medicine to Japan. Students who gathered from across the nation were mainly Samurai. Through Dutch studies, students, who came into contact with the modern science of western Europe and the rational thinking patterns that supported it, made outstanding accomplishments not only in the medical field but in various fields from the end of the Edo period and throughout the opening of the country in the Meiji Era, contributing greatly to the modernization of Japan. Graduates from Tekijuku include SANO Tsunetami, the original president of the Japanese Red Cross Society, NAGAYO Sensai, pioneer in Japan's hygieiology and in the prevention of cholera, HASHIMOTO Sanai, who argued for the opening of the country, OMURA Masujiro, founder of Japan's modern military science, and FUKUZAWA Yukichi, founder of Keio University who strived for cultural enlightenment.

Into the Present

Inheriting the traditions of these two institutions, Osaka Imperial University was founded as the sixth imperial university of Japan in 1931, consisting of the schools of medicine and science. Shortly after its establishment, YUKAWA Hideki, the first person in Japan to receive a Nobel Prize, developed his Nobel Prize winning "meson theory" here. Since then, Osaka Imperial University merged with Osaka Technological College. As a result of the government's education system reform in 1949, the university began a new start under a new system as Osaka University, developing into a university that covers various fields in the arts and sciences.

In 1921, an Osaka business woman named HAYASHI Choko, approached the government, under the philosophy of "creating a school in Osaka that raises internationally capable people." Through an endowment by Ms. HAYASHI, the state-funded Osaka School of Foreign Languages was founded. In 1949, under a new system, the university became the Osaka University of Foreign Studies, developing as the center of foreign language studies in western Japan.

In October 2007, both universities, each holding a long tradition of education and research and built with the generous support of the local people, merged together to become the new "Osaka University". Currently, Osaka University consists of eleven schools, sixteen graduate schools, five research institutes, four libraries, two hospitals, and twenty-five joint-use facilities spread out between the Suita, Toyonaka, and Minoh campuses. In addition, the university has four Overseas Centers for Education and Research, located in San Francisco (USA), Groningen (the Netherlands), Bangkok (Thailand) and Shanghai (China).

Furthermore, in 2004 the Nakanoshima Center was established in the Nakanoshima district, and in 2008 Kaitokudo for the 21st Century was established in the Toyonaka area. These two centers serve as a base for contributing to and cooperating with society, conducting a variety of education and research activities and cultural programs open to the community, and practicing the mentality of liberalism and modernism, the roots of Osaka University.

"Reflecting on the Origin, Looking to the Future"

Osaka University will celebrate the 80th anniversary of its founding in 2011.

The theme for the 80th anniversary is, "Reflecting on the origin, looking to the future". The university will pursue the spirit embodied in Tekijuku and Kaitokudo, the roots of Osaka University, and the intellect based upon it. Now, once more recalling its origin, Osaka University, a university open to society, will assume the role of cooperating with society, business and industry under the motto "Live Locally, Grow Globally" as a local and international cultural organization. The university shall go forward with activities distinctive of its "Handai Style (Osaka University Style)".

Osaka University			Osaka University of Foreign Studies
Kaitokudo	1724		
Tekijuku	1838		
		1921	Osaka School of Foreign Languages
Osaka Imperial University	1931		
Osaka University	1949	1949	Osaka University of Foreign Studies
Osaka University National University Corporation	2004	2004	Osaka University of Foreign Studies National University Corporation

2007
The "new" Osaka University
(by merging the two universities)

2011
The 80th anniversary of the founding

Alumni Spotlight
NAKAMURA Kunio,
Chairman of the Board, Panasonic Corporation

Keep on Learning Surrounded by a Diversity of Peoples and Cultures!

Panasonic Corporation, one of the largest comprehensive electronics manufacturers in the world, found itself stuck in a quandary around 10 years ago. Sluggish performance brought about by an inability to develop competitive products under a rigid organizational structure with much overlapping was bringing the corporation to a standstill. The person who managed to change Panasonic's corporate culture and lead it in a successful V-shaped recovery was NAKAMURA Kunio. Assuming the post of president in 2000, he implemented a "Reform without Sanctuary" under the slogan of "Deconstruct and Create," which resulted in the corporation's successful revival as a dynamic company aiming to become a global excellent company.

In the following article, looking back upon his study of merchant culture at Osaka University and upon his experience learning from different cultures while working abroad, NAKAMURA imparts a message for the younger generation, tomorrow's pathfinders.

One must make a lifelong commitment to learning

As I was born and raised in Shiga Prefecture, I have always had a strong interest in two things: one is Japanese history, especially the time around the end of the Edo Era (1603-1868), when the Feudal Lord Il Naosuke (1815-1860), also from Shiga, ended Japan's isolation policy[1] in his position of a *Tairo*[2] of the government by forcibly opening Japan for modernization. Lord Il was convinced that "Opening the country is only the way for Japan to survive."

The other interest of mine is the Japan's economic history, with a special focus on the trading practices of the Omi merchants [Shiga merchants], who reached the height of their prosperity during the Edo Era. They implemented their own managerial philosophy of "3-Way Satisfaction" (satisfaction for the vender, the customer, and the public), which is similar to the modern CSR (Corporate Social Responsibility) concept, and expanded their business throughout Japan.

Wanting to study both Japanese history and the history of Japan's economy, it seemed to me that Osaka University was the best university for me. That is, Osaka developed as a city with a dynamic economy under the government policies of the Edo Era. With relatively few samurai warriors and a population composed largely of commoners, Osaka was an ideal city to be a merchant in. In an atmosphere of freedom, equality, and independence, administration of the city was largely left up to the merchants. I was particularly intrigued by Osaka University as I felt it had inherited much of the history and culture of Osaka, having as its roots Tekijuku and Kaitokudo, two influential academic institutions. Moreover, I had the impression that the university possessed close relations with industry.

I believe I studied hard at Osaka University. I studied many things that interested me, even subjects outside my major such as classical Japanese literature. I especially enjoyed lectures given by one of my professors, INUKAI Takashi, a noted scholar of Japanese literature, particularly *Manyoshu*[3] poetry.

I participated in seminars on the history of Japan's economy offered by one of my professors, SAKUDO Yotaro, an up-and-coming economist at that time, and one who I respected very much due to his caring manner in acting as my mentor both at the university and in private. My graduation thesis dealt with the NAKAI Omi merchant family, which was responsible for developing the world-class double-entry bookkeeping method in the 18th century. I happily engaged in discussions with professors and other students and read numerous books wherein the knowledge and wisdom of humankind are condensed. Learning widened my world and deepened my thoughts, and I truly believe the time I spent at Osaka University

was profoundly meaningful.

I feel people tend to become self-indulgent and self-satisfied if they lack a lifelong commitment to learn. Osaka University gave me valuable opportunities to become aware of this important principle.

Interaction with the cultures of the world generates growth

Immediately after graduation, I joined Matsushita Electric Industrial Co., Ltd. (now known as Panasonic Corporation following a name change in October 2008). Through my study of Japan's economic history at Osaka University, I had developed an empathy with the managerial philosophy of its founder, MATSUSHITA Konosuke. In 1987, at the age of 48, after 25 years of involvement in the domestic sales of consumer electronics, I was suddenly transferred to a subsidiary in the USA. These days I don't have a problem with communicating in English; however, I have to admit that I spoke almost no English at that time, severely limiting my ability to communicate at all in that language. In order to rectify this, I tried many things such as watching an English language movie over and over again, up to around 100 times, to improve my listening ability, and placing dictionaries everywhere in the house to increase my vocabulary. What is important to remember is that English is a tool for living. I also decided while I was staying there, to learn as much as possible about the best America had to offer. For example, Japanese-style management is based mainly on "compassion" as seen in the systems of "promotion by seniority" and "lifetime employment." On the other hand, America's management style is rooted in "rationalism." I think management and business are fundamentally rational. Observing our corporation from this viewpoint, I could see it was strangled by a dearth of rationality, an approach typical of Japanese society, and thought such an approach made it impossible for our company to be competitive in the global arena.

I also read Peter DRUCKER's books in those years, and the experience of reading them was another eye-opener for me and taught me a great deal.

We Japanese, living as we do in a largely homogeneous society, are not very good at interacting with people and dealing with things from other cultures. Of course, it is difficult to grow if you shut yourself away within a world where the things and people around you are all similar. People generate new ideas by interacting with things and people that are different. I learned this from my experience working overseas, and I believe it is important for universities to offer such opportunities to students.

After working overseas for 10 years, I became president of an internal company. Later, upon being appointed to the position of president of the entire company, I committed myself to bringing about corporate reform. At that time, I really felt our corporation was lucky to have a respectable corporate philosophy as stated by the founder, MATSUSHITA Konosuke. Our corporate philosophy serves as a firm foundation for decision-making. Changing our corporate philosophy would never do. However, how to put the philosophy into practice needs to be changed in accordance with the changing times. Without making such changes, a corporation would never survive. Actually, the founder himself insisted on the idea, "Start anew each day," and always put it into practice. This concept can be translated as having daily and consistent innovation and the strenuous implementation of such. I merely put his philosophy into practice.

A corporation and a university should be places where the wisdom of the world is gathered

At present, our corporation is focusing on a global strategy, and is addressing the urgent need to develop human resources in order to carry it out. For example, among the 1,390 new employees that will join us in 2011, 1,100 will be from overseas. Through the Panasonic Scholarship, established in 1998, we have supported approximately 300 students from Asian countries to do postgraduate studies in Japan. Some of them find jobs in Japan and others return to their own countries after completing the program. I hope they will go on to play important roles in the 21st century as leaders in Asia and will promote mutual relations between Japan and their respective countries.

It is probably not an exaggeration to say that the global strategy of a corporation must be a human resource strategy. I think one of the most important roles of a university is to foster human resources. In this way, I trust that Osaka University will further open itself up to the world, enrolling ambitious young people both from overseas and Japan, offering them learning opportunities to interact with a variety of people and cultures.

I also hope that the young people who come to Osaka University to study will learn hungrily in this liberal, active, and down-to-earth environment, enjoying a full student life, and growing through positive involvement with and understanding of other cultures and peoples, while being receptive to differences. University is a starting point for lifelong learning. I hope you will remember this and discipline yourself to acquire a genuine commitment to learning, a commitment that will last your entire life.

1 **Isolation policy**: The policy that banned Japanese from interacting with foreigners and restricted exchange and trade with foreign countries. It was implemented by the Tokugawa Shogunate Government from 1639 to 1854 during the Edo Era, and resulted in Japan's isolation from the outside world.
2 ***Tairo***: Chief councilor to the Shogun, the head of the Tokugawa Government
3 ***Manyoshu***: *The Manyoshu* is considered the oldest existing compilation of Japanese poetry. Literally "Collection of Ten Thousand Leaves," the *Manyoshu* was compiled during the Nara period, at some point after the year 759.

Profile
Born in 1939, NAKAMURA graduated from the School of Economics, Osaka University, in 1962, and immediately joined Matsushita Electric Industrial Co., Ltd. (present-day Panasonic Corporation). From 1987 to 1997, he worked overseas, mainly in the USA. In 2000, he was appointed President and, in 2006, Chairman of the Board of Panasonic Corporation.

Creating the Future

The Propagation of Behavioral Economics from the Institute of Social and Economic Research, Osaka University

The Institute of Social and Economic Research has traditionally been known as a world-renowned mecca for traditional economics, but in recent years, it has also become known as a mecca for the relatively new field of behavioral economics. In 2006, a Research Center for Behavioral Economics was established within the Institute, and in 2010, the Institute was designated as a Joint Usage Research Center for behavioral economics by the Ministry of Education, Culture, Sports, Science and Technology.

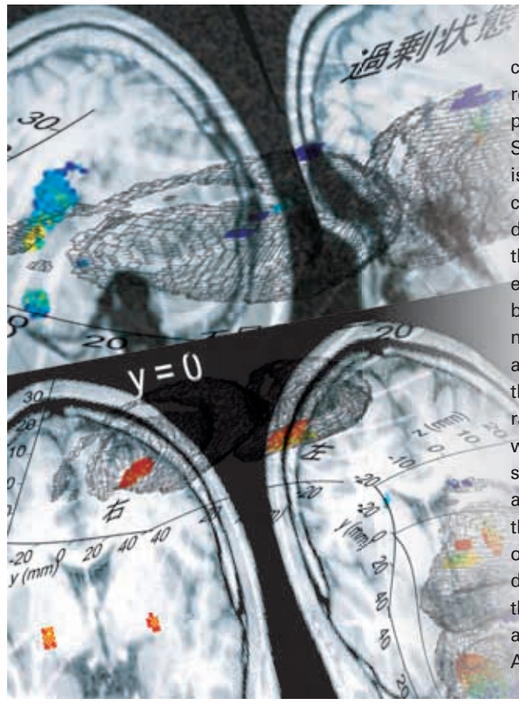
Whereas traditional economics assumes that people behave rationally, behavioral economics presupposes a more realistic pattern of human behavior. The Institute of Social and Economic Research is using a behavioral economics approach to analyze a variety of problems facing the Japanese economy such as long-term stagnation, income disparities, etc., and propagating the results of this research throughout the world. Here, we summarize some of our research activities in these areas.

Professor Yoshiyasu Ono has formulated a macroeconomic model of stagnation that is based on a behavioral economics approach to people's money holding behavior. While most economists neglect the role of money as a target of people's desire, Ono focuses on it and finds that an insatiable desire to hold money generates long-run stagnation even without market distortions. When people choose between consumption and saving, a decline in prices due to a shortage of demand has two effects. One is that it expands the real value of money and thereby makes people feel richer, which induces them to consume more. The other effect is that a decline in prices gradually raises the value of money, which makes it more advantageous for people to hold money and reduce consumption. If people have an insatiable desire to hold money, the former effect does not operate while the latter does. Thus, continuous deflation induces people to keep consumption lower than the full-employment level of output.

Professor Charles Yuji Horioka has been studying saving behavior for most of his career. Early in his career, he showed that the widely known "Feldstein-Horioka Paradox" (the behavioral pattern that people prefer to invest their money domestically even if capital markets are liberalized) holds empirically. Moreover, he is also well-known for having correctly predicted very early on that Japan's household saving rate would decline rapidly due to the aging of her population. Finally, he showed that the bequest motives of the elderly in Japan are motivated by a desire to induce their children to care for them in old age. Horioka received the Japanese Economic Association/Nakahara Prize in 2002.

Professor Shinsuke Ikeda is continuing theoretical and empirical research on intertemporal choice behavior. His achievements include building theoretical models that take account of luxury goods and habit formation. Moreover, he has conducted research on the relationship between the time discount rate and obesity, smoking, excessive borrowing, and other social problems.

Professor Fumio Ohtake has analyzed income disparities in Japan using a behavioral economics approach. For example, in his book entitled *Inequality in Japan*, Ohtake sheds light on the actual conditions of inequality in Japan and the determinants thereof, using government data and data from questionnaire surveys. In the United States and the United Kingdom, it is said that the increase in wage disparities by educational attainment caused by the IT revolution and the globalization of economic transactions were responsible for the sharp increase in incomer and wage disparities after 1980. Ohtake showed that the increase in wage disparities until around 2000 in Japan was due not to these factors but to the aging of the population and to changes in household composition. Moreover, Ohtake showed the relationship between the actual conditions of disparities and people's attitudes using a unique questionnaire survey that he himself conducted. For example, he showed that, in Japan, unlike in other countries, males are more likely to support income redistribution policies than females. Ohtake's research has been very highly evaluated by the economics profession, and he has received the Japanese Economic Association/Ishikawa Prize, the Nikkei Book Prize, the Suntory Prize, the Economist Prize, and the Japan Academy Prize.



There is a new subfield within behavioral economics called neuroeconomics. Neuroeconomics is a field in which researchers observe brain function from a neuroscientific perspective when people make economic decisions. Specially Appointed Associate Professor Saori Tanaka is one of the few neuroeconomists in Japan. She has conducted research on brain function when individuals decide between a small reward now and a larger reward in the future using the concept of a time discount rate. Using experimental techniques and mathematically analyzing brain activity data obtained using a non-invasive brain measurement method called fMRI, she observed the brain activity of people engaged in decision making. She showed that the projection of rewards based on different discount rates depends on the circuits of the brain, and this research was published in *Nature Neuroscience*. Furthermore, she showed by measuring the brain activity of subjects after artificially adjusting serotonin level of the brain that the part of the brain that is involved in the projection of rewards based on different discount rates differs depending on the level of serotonin. Tanaka was awarded the Japan Neuroscience Society Monograph, Research, and Achievement Awards and the Seventeenth Nakayama Achievement Prize for this research.

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Outstanding Achievements and Programs

Osaka University has produced remarkable research achievements and top class researchers. From the time Osaka University was first founded, we have continued to value the freedom and vigor in advancing education and research under the motto of "Live Locally, Grow Globally."
The university has also aimed at heightening its international presence by conducting quality research that combines both basic and emergent approaches. In this section, you will find a brief introduction on the activities of our prominent initiatives.

Global 30

The Ministry of Education, Culture, Sports, Science and Technology (of the Japanese Government) launched the "Global 30" Project for Establishing Core Universities for Internationalization in 2009. Osaka University is one of the thirteen leading universities selected in the first year of the project's implementation. The university is expected to play a major role in spearheading higher education internationalization efforts in Japan by dramatically boosting the number of international students as well as Japanese students studying overseas. (see p.9)

Funding Program for World-Leading Innovative R&D on Science and Technology (FIRST Program)

Using the Japanese government's FY2009 supplemental budget, a "Leading-edge Research Promotion Fund" of ¥150 billion was established in November 2009 within the Japan Society for the Promotion of Science for the purpose of advancing cutting-edge research projects in a strategic and comprehensive manner. ¥100 billion of this Fund has been dedicated to this program.

The aim of the FIRST Program is to advance the kind of leading-edge research and development that will strengthen Japan's international competitiveness while contributing to society and people's welfare through the application of its results.

Two programs from Osaka University were selected in 2009. (see p.11,12)

Global COE Program

The "Global COE (Centers of Excellence) Program" was established and launched in 2007 to meet the growing challenges of advancing globalization. The program provides funding support for establishing education and research centers that perform at the apex of global excellence to elevate the international competitiveness of Japanese universities.

The program also strengthens and enhances the education and research functions of graduate schools in fostering highly creative young researchers who will go on to become world leaders in their respective fields through experiencing and practicing research of the highest world standard. Twelve programs from Osaka University were selected between FY2007-2009. Programs selected in FY2009 and FY2008 are introduced from p.13.

Selection results for 2007

Program Title	Program Leader
System Dynamics of Biological Function www.fbs.osaka-u.ac.jp/gcoe/index-e.php	YANAGIDA Toshio Professor, Graduate School of Frontier Biosciences
Global Education and Research Center for Bio-Environmental Chemistry www.gcoebec-osaka-u.jp/	FUKUZUMI Shunichi Professor, Graduate School of Engineering
Center of Excellence for Advanced Structural and Functional Materials Design www.mat.eng.osaka-u.ac.jp/gcoe/index-e.html	KAKESHITA Tomoyuki Professor, Graduate School of Engineering
Center of Excellence for Founding Ambient Information Society Infrastructure www.ist.osaka-u.ac.jp/GlobalCOE	MURATA Masayuki Professor, Graduate School of Information Science and Technology
Center for Electronic Devices Innovation www.eei.eng.osaka-u.ac.jp/gcoe/english/	TANIGUCHI Kenji Professor, Graduate School of Engineering
A Research Base for Conflict Studies in the Humanities gcoe.hus.osaka-u.ac.jp/index_english.html	KOIZUMI Junji Professor, Graduate School of Human Sciences
A center of Excellence for an in Silico Medicine-Oriented Worldwide Open Platform www.mei.osaka-u.ac.jp/gCOE/english/index.html	NOMURA Taishin Professor, Graduate School of Engineering Science and the Center for Advanced Medical Engineering and Informatics

Global 30

Osaka University's Global 30 Project

Global 30 aims to make selected universities more global and internationally competitive by:

(1) establishing a system to provide classes in English, (2) improving the system for accepting international students, (3) promoting international cooperation, and (4) nurturing superior personnel who can play an active role in the global arena in supportive environments designed for their growth.

The core universities are also expected to foster a new generation of Japanese graduates with an international perspective, and international graduates with a global outlook as well as local Japanese knowledge and experiences.

As a G30 University, Osaka University is able to offer international students the following specific advantages.

Degree Programs in English (details on p.102)

New Programs

- Human Sciences All-English Undergraduate Degree Program (BA) (To commence in October 2011)
- Chemistry-Biology Combined Major Program (BS or BE) (started in October 2010)
- Special Integrated Science Course (MS/Ph.D.) (started in October 2010)
- International Physics Course (MS/Ph.D.) (started in October 2010)

Ongoing Graduate Degree Programs

- Frontier Biotechnology
- Engineering Science
- Naval Architecture and Ocean Engineering
- Quantum Engineering Design

Short-Term Non-Degree Programs (details on p.103)

Various short-term programs are available for international students.

- OUSSEP
- Maple
- Frontier Lab@OsakaU
- Regular Short-Term Exchange Programs
- Spring & Summer Intensive Program (www.isc.osaka-u.ac.jp/english/)

International College

International College was established to efficiently implement and supervise the Global 30's undergraduate programs and to promote the internationalization of education.

It works closely with schools and departments within the university to create a synergy among the faculties concerned, so as to provide an optimal learning environment for students.

International College undertakes admission and public relations, curriculum development, orientations for new students and other activities designed to enhance students' performance.

The Center for International Education and Exchange (CIEE)
(www.isc.osaka-u.ac.jp/english)

The Center for International Education and Exchange (CIEE) was established in order to play a crucial role in the planning and operation of education and research-based international exchange at Osaka University, and to boost the numbers of international students enrolled at Osaka University as well as of students who participate in overseas exchange programs.

The Center consists of experts specialized in Japanese language education and research, intercultural and advising research, and the development of short-term exchange programs.

The Center is also dedicated to improving Japanese language education and to providing support for the implementation of short-term exchange programs at all levels and across all departments, by providing support for both incoming international students and outgoing students.

The Support Office (details on p.108)
(www.rcnp.osaka-u.ac.jp/osaka-ip/supportoffice/)

The Support Office was established to offer assistance to all of the international students, scholars and their families at Osaka University. It expanded its services by adding new staff members consisting of two full-time professors and four bilingual officers from October 1st, 2009.

Studying Abroad Programs

As part of its internationalization efforts, Osaka University is also expanding Studying Abroad Programs to increase the number of domestic students who study at overseas institutions.

We provide all enrolled students, who wish to expand their knowledge and perspectives globally, with excellent opportunities for international exchange and outreach.

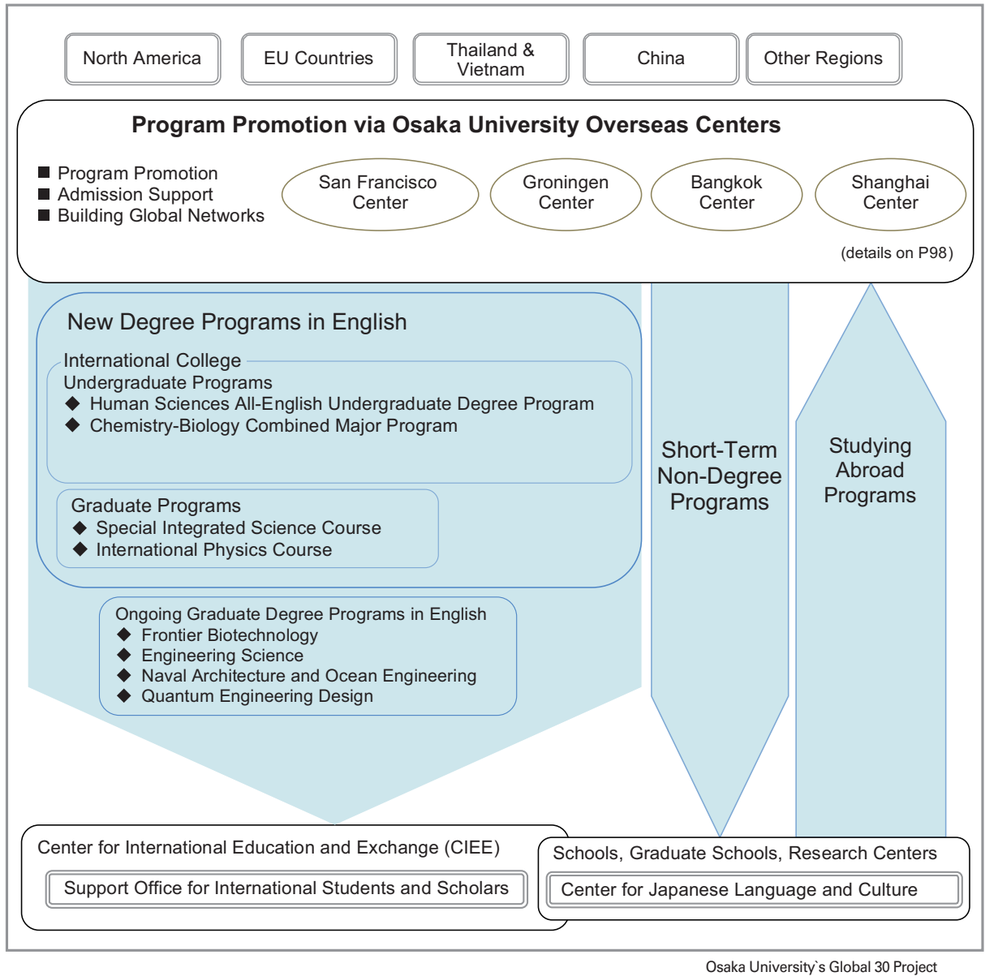
Our status as a G30 University means that Osaka University has both dedicated funding for its internationalization programs and strict targets to be met. Osaka University aims to double the number of international students (currently about 1,600) to 3,000 by 2020, the target year for G30.

Equally, by 2020, we aim to achieve a non-Japanese faculty ratio of at least 7%.

Being chosen as a G30 University, Osaka University is committed to incorporating more international students and scholars into our programs and campus activities and strengthening international components in our education and research.

Our internationalization effort is not limited to individual departments or faculty.

Being 'Global' is a defining characteristic of the entire University.



Osaka University`s Global 30 Project

Funding Program for World-Leading Innovative R&D on Science and Technology (FIRST Program)

Comprehensive Understanding of Immune Dynamism : Toward Manipulation of Immune Responses

AKIRA Shizuo
Professor and Director, Immunology Frontier Research Center
akira-pj.lserp.osaka-u.ac.jp/en/

From FY2009 to FY2013

The World-Leading Immunology Research Project

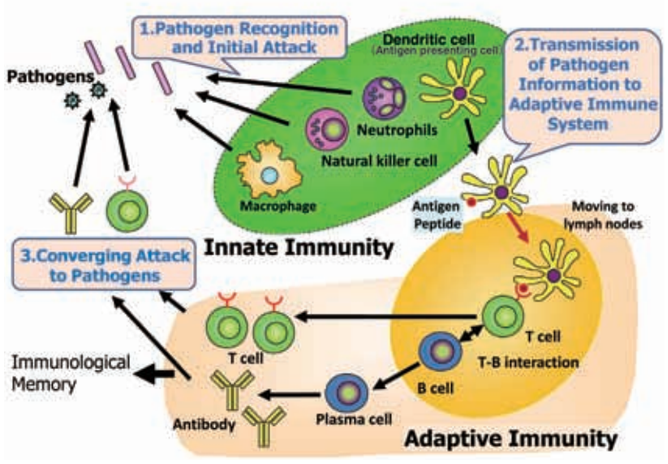
Toward the development of new drugs and treatments for allergic diseases and cancers.

Japan has been a world leader in the field of immunology, and Osaka University is particularly known as a front runner in this field. Osaka University Immunology Frontier Research Center (IFReC) was launched in 2007 and is expected to become a leading immunology research center.

The immune system is the "host defense mechanisms" to protect the body from pathogens. The immune system consists of as large as 10^{11} immune cells such as T cells, B cells, dendritic cells etc. These immune cells interact with each other to eliminate invading pathogens. However, the dynamism of when and how the immune cells behave in vivo remains virtually unknown.

In FY2009, the research project "Comprehensive understanding of immune dynamism: toward manipulation of immune responses" was selected for the Funding Program for World-Leading Innovative R&D on Science and Technology (FIRST Program) of the Japanese Ministry of Education, Culture, Sports, Science and Technology. With the aim of manipulating immune responses in vivo by starting with their visualization, this project has been conducted under the leadership of Professor AKIRA Shizuo, who is the Director of IFReC and one of the most renowned immunologists in the world. World-leading researchers in the fields of "biological imaging" (techniques for visualizing immune cells) and "bioinformatics" (methods of information science applied to life science) as well as immunology recruited from Japan and abroad participate in this project. Expected achievements of this project include visualization of the behaviors of immune cells through the use of imaging technology such as advanced microscope and MRI (Magnetic Resonance Imaging), and computational simulation of dynamic immune networks by analyzing individual molecules in the immune system. This approach would represent the first step toward manipulation of immune responses in vivo.

Furthermore, this project is expected to lead to the development of new treatments for allergic disorders affecting an estimated 40% of the Japanese people such as atopic dermatitis and hay fever, and those for autoimmune diseases such as rheumatism and collagen disease. It may also pave the way for the development of vaccines against cancers and emerging infectious diseases such as influenza A (H1N1). Therefore, this project is significant for Japan to stand at the global forefront in solving these challenges confronting today's society.



Interaction between innate and adaptive immunity

When a pathogen invades the body, the innate immune system recognizes and makes an initial attack on it.
Meanwhile, information of the pathogen is transmitted to the adaptive immune system and used in preparation for attacking the pathogen.
Immunologists of Osaka University, including Prof. AKIRA, have made outstanding contributions to research on multilayered mechanisms of the immune system.

Funding Program for World-Leading Innovative R&D on Science and Technology (FIRST Program)

Research and Development of Innovative Nano-Devices based on Single-Molecule DNA Sequencing

KAWAI Tomoji
Specially Appointed Professor, Institute of Scientific and Industrial Research

From FY2009 to FY2013

www.kawaisaisentan.osaka-u.ac.jp/

The leading player in the world for sequencing of a single DNA molecule that conveys genetic information of creatures.
"Integrated R&D Project to Realize Health and Security"

DNA consists of base sequence of nucleotide that can be identified by DNA sequencing method.

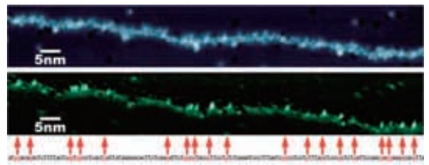
Researchers in the world now are competing intensely to make sequencing much faster.

Osaka University is the leading player in the world for sequencing of a single DNA molecule that conveys genetic information of creatures.

Funding Program for World-Leading Innovative R&D on Science and Technology "Research and Development of innovative Nano-Devices based on single-molecule DNA sequencing" is promoted by the following two advanced research results.

One is the unprecedented technology for detection and identification of one bio molecule. Guanine base molecules appeared on the cover of Nature Nanotechnology in 2009, that was identified by Professor Kawai and his team astonished the world. Individual 10 micrometer DNA strand like an earthworm can be seen clearly as in the Figure 1.

Recent DNA sequencing method still takes two months to decode all genome in one person with the cost of as much as 100,000 dollars due to the vast number of DNA



▲ Figure 1 :STM(Scanning Tunneling Microscope) imaging of single stranded DNA base molecules

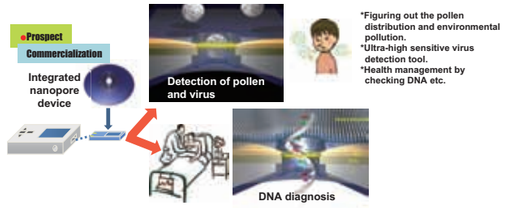
molecules. Genome means all genetic information made by 3 billion DNA bases consisted of four kinds of base molecules. It is said that we are going to enter the age of "1,000 dollars sequencing" per day by 2015. In other words it will take only 1,000 dollars or so to identify DNA molecules in a day.

The other result is the development of nano-pore for DNA sequencing with the use of the state-of-the-art Gating Nano-pore method that is the target researchers all over the world are now trying to achieve.

Gating Nano-pore method is the technology to make out the base configuration by putting one DNA strand separated in the pretreatment process through nano-pore attached to the gate electrode. Three of four bases has already been identified at 2010.

As the specific result of this high-speed sequencing of DNA single molecule, tailor-made medicine can be realized by applying genetic background knowledge.

For example development of a diagnostic tool (with DNA chips) for medical institutions to detect cancer markers and detection device of virus or bacteria within fifteen minutes is supposed to start soon in cooperation with influential companies and other universities. This is truly useful for taking countermeasures against pandemic such as new influenza and preventing bio terrorism. It is also expected to apply it to food management as well as space development.



Global COE Program

Center of Human-friendly Robotics Based on Cognitive Neuroscience

ISHIGURO Hiroshi
Professor, Graduate School of Engineering Science

Selected in 2009

www.gcoe-cnr.osaka-u.ac.jp/

This COE aims to develop new IRT (Information and Robot Technology) systems that can provide information and services based on understanding "cognitive neuroscience." Cognitive neuroscience concerns higher brain functions such as memory and reasoning. While traditional technologies have made our society convenient, their negative effects on our cognitive functions have been disregarded. In order to reveal their problems and to establish a new design principle for safe and adaptable IRT systems, this COE integrates our world-famous research in robotics, cognitive science, and brain science, being conducted at Osaka University and ATR.

Robotics research at Osaka University and ATR is distinguished by human-oriented studies. We aim to understand human intelligence by developing humanoids and androids that communicate with humans. Our studies on human-robot interaction and on modeling of cognitive development are pioneering work, which integrates robotics with cognitive and brain sciences. Osaka University also holds the nation's largest program in cognitive psychology. We have been investigating working memory and attention control in collaboration with brain science. Our research on brain science is recognized worldwide. Osaka University and ATR have developed the world's leading technologies for brain imaging and brain-machine interface, which are facilitating our research in robotics and cognitive psychology. This COE more closely integrates robotics, cognitive science, and brain science in order to establish an interdisciplinary research area called "Cognitive Neuroscience Robotics"

Our research activities will be supported by the following educational programs: "Caravan" aims to encourage students and young researchers to study at our center. We will visit various countries to discuss the potential of Cognitive Neuroscience Robotics and to promote our activities. "Starting school" intends to support young scientists initiating their work. We will teach them research methodologies, e.g., how to find scientific questions and how to address the questions, in the interdisciplinary framework. Students' work will be supervised by multiple researchers from different disciplines. "Brush-up school" is a semimonthly workshop where students intensively discuss with their supervisors and other students. Meanwhile, they will also have opportunities to visit other universities and institutes to improve their scientific skills. Through all these activities, this COE will establish a new educational and research system at Osaka University wherein humanities and science will be tightly integrated.

Global COE Program

Frontier Biomedical Science Underlying Organelle Network Biology

Selected in FY2008

YONEDA Yoshihiro
Professor, Graduate School of Frontier Biosciences and Graduate School of Medicine

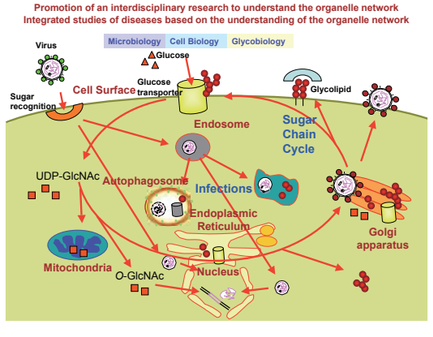
www.fbs.osaka-u.ac.jp/organelle-network/

Creation of the organelle network medicine based on the understanding of life as a system

Elucidation of individual molecular functions and understanding of intermolecular interaction have advanced rapidly in life science through exhaustive analyses of the genome, proteome, glycome and so on. However, the current analysis effort remains largely at the level of molecular networks. To understand a cell, the fundamental unit of life, as a system, to elucidate the nature of various diseases, which take place as the disruption of the cell system, and to connect these observations to treatment, it is essential to understand the communications between organella (functional intracellular compartments), that is, the **organelle network**. This COE combines the following three fields: **Cell Biology**, which studies various organella, **Glycobiology**, which studies sugar chain cycles, which play essential roles in constructing organelle network, and **Microbiology**, which studies the interface between pathogen (which very skillfully utilizes the organelle network to increase the number of offspring) and host cell. As a result, a new field of medicine, which should be called **Organelle Network Medicine**, will be developed. The results related to the organelle network studies as a basis allow the introduction and deployment of new aspects on the elucidation of disease conditions and the establishment of their treatment. Based on these viewpoints, we wish to establish the sole educational research center for organelle network study in the world. This is the world's first hub concept.

The research plans to be carried out are as follows: **[1] Promotion of interdisciplinary studies to elucidate the organelle network**: By focusing on the nature of infection that a pathogen infects host cell by skillfully taking advantage of the cellular organelle system, we will analyze the infection mechanism from the aspect of cell biology. In addition, we aim to elucidate the organelle network by analyzing the sugar chain cycle closely related to various organelle functions. **[2] Integrated understanding of disease conditions such as infections and neurodegenerative diseases based on the understanding of the organelle network**: Staying away from the current view, we will aggressively adopt the methodologies of system biology and theoretical biology, and truly understand the complex diseases such as infections, neurodegenerative diseases and so on from the view-point of the organelle network. Further, based on the understanding of the organelle network, we will ascertain the proteins and the sugar chain modifications related to the nature of the disease conditions, and aim to develop diagnostic and new treatment methods utilizing them as targets.

To establish such a hub with highly interdisciplinary research base, it is essential to carry out personnel training of talented young investigators who can take an active part in international events. In view of this, we will create the Researcher Development (RD) Program courses to teach leadership capability to graduate students and postdoctoral researchers. In addition, we will hold international meetings with a training camp format, which are organized by young investigators. Further, one of our missions as an international network center is to link the world class research centers, the Immunology Frontier Research Center, the International Research Center for Infectious Diseases of the Research Institute for Microbial Diseases, and the Research Collaboration Center on Emerging and Re-emerging Infections in Thailand in a very well organized fashion. As such we view that it is important to accept overseas students and young investigators to construct a more international educational system.



Global COE Program

Core Research and Engineering of Advanced Materials -Interdisciplinary Education Center for Materials Science-

Selected in FY 2008

KITAOKA Yoshio
Professor, Graduate school of Engineering Science

www.gcoe.mp.es.osaka-u.ac.jp/eng/

Studies on materials physics based on quantum mechanics have led to repeated discoveries of functional materials that are essential for advanced scientific technologies, such as semiconductors, magnetic materials, superconducting materials, and lasers, and have thrown light on the principles underlying their unique properties. The development of next-generation advanced scientific technology and the fabrication of efficient, environment-friendly energy sources that can save natural resources is vital, in order to meet the increased demand for energy in the 21st Century; these are tasks of significant importance to mankind.

Researchers will work together, aiming to the basic research on creation of quantum materials, search for new quantum phases, and theoretical analysis in the multidimensional environment. With a close coordination between the results obtained in physics and chemistry laboratories, novel quantum materials and evolutional experimental methods will be used to discover complex physical phenomena and understand these mechanisms, which will help us in understanding the various concepts in physics, thereby redefining and reestablishing the as-yet poorly understood principles of materials science.

Furthermore, other groups aim to creation of functional materials in the future through the control and design of quantum functions as the follows; development of innovative quantum devices (Fig.1), development of optronics, quantum information process (Fig.2), and quantum function design for the control and design of quantum functions relating to electrons, molecules, spin, and light.

This COE program would nurture researchers and technicians with wide exposure and potential to generate new ideas and find solutions to new and existing problems with perseverance. This can be made possible through direct confrontation with the ideas of overseas researchers to ingrain an international outlook and wide exposure experience in fields outside one's area of specialization (participation in joint research involving other fields and organizations, accumulating knowledge outside one's field of specialization), and company internships (for gaining practical experience at research sites and participation in the technology development of various companies).

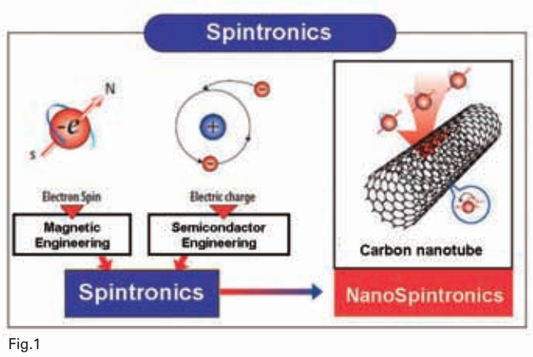


Fig.1

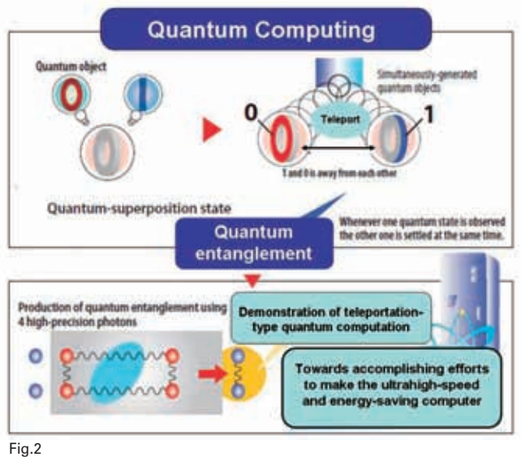


Fig.2

Global COE Program

A Center of Excellence for Atomically Controlled Fabrication Technology

YAMAUCHI Kazuto

Professor, Graduate School of Engineering

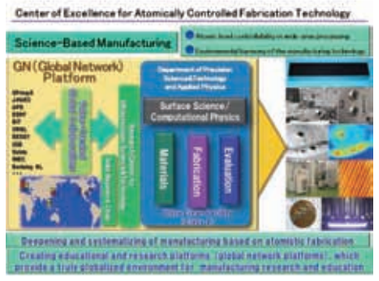
Selected in FY2008

acftgcoe-osaka-u.kir.jp/index-e.php/

In this COE Program (Global COE), we aim to transform "leading" manufacturing into "value creation" by manufacturing. The core of "value creation" by manufacturing should be "high performance and high functions" that are required in next-generation fabrication processes. In the previous COE Program "Creation of Atomistic Fabrication Technology," we successfully established a research center for "science-based manufacturing," which conducts consistent research ranging from theoretical clarification of physical/chemical phenomena that can be utilized in fabrication technology, to development of processing equipment to control these phenomena, fabrication of optical or electronic devices for practical use, and performance evaluation of these devices. We have realized a number of leading fabrication technologies, such as the highly accurate manufacturing process of optical devices for synchrotron radiation; next-generation, high-performance semiconductor devices; the high-rate deposition process for functional thin films using atmospheric-pressure plasma; and environment-friendly machining and cleaning technology for semiconductor processes using ultra pure water only. These technologies serve as a foundation for next-generation manufacturing.

The concrete "leading" manufacturing into "value creation" is 1) atomic level controllability in wide-area processing and 2) environmental harmony of the manufacturing technology. To achieve this aim, we will remove barriers between different research fields and establish strong collaboration with international research institutes and private companies in different fields that share the common goal of "value creation." Based on these collaborative efforts, we intend to create educational and research platforms (global network (GN) platforms), which provide a truly globalized environment for "manufacturing" research and education. On GN platforms, related academic fields in various stages of production, from basic research to application, are unified. This is made possible only by using high levels of fabrication technologies as a centripetal force. In addition, using Ultra Clean Facilities (Class 1 clean rooms equipped with various processing machines for atomistic fabrication technology, which were constructed in the former COE program), "on-campus internships" on GN platforms can be realized by promoting "value creation" in collaboration with different fields.

The principal aim of the Global COE program is, through the education/research programs on GN platforms, to continuously cultivate young researchers having high levels of creativity and independence, as well as international sensibility and the ability to integrate different fields, who will participate in the development of next-generation fabrication technologies, and who are expected to play important roles particularly in private companies.



Research programs:

We aim not only at the creation of fabrication processes beyond the current limitations, but also at the systematization of fabrication processes as science in terms of the functions of fabrication technology. We conduct such research and development through collaboration with other organizations from different fields, to realize highly functionalized, atomically controlled fabrication technology with true value.

In order to promote international collaboration among different fields, we will establish various research grants for young researchers.

Educational programs:

We establish on-campus internships through learning-by-doing instruction on the GN platforms. In concrete terms, with team-type learning-by-doing educational and research programs as the main thrust, we conduct the effective programs. In addition, using GN platforms, we support the formation of an international community for young researchers beyond their individual stages. Through these efforts, we aim to promote the acquisition of interdisciplinary character and independence and to support personnel exchanges among various fields, along with enabling multiple career paths.

Global COE Program

Human Behavior and Socioeconomic Dynamics

OHTAKE Fumio

Professor, The Institute of Social and Economic Research

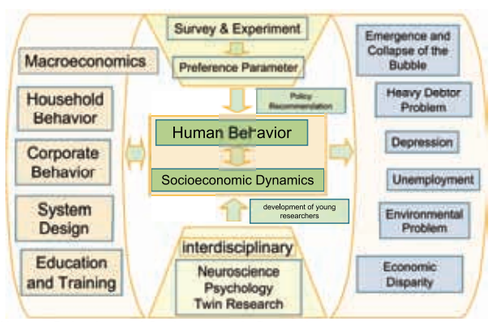
Selected in FY2008

www.iser.osaka-u.ac.jp/coe/gcoe-e.html

Our Global COE (GCOE) project, selected as one of the projects of the GCOE Program, aims to provide us with better and deeper understandings of human behavior and socioeconomic dynamics as well as plausible solutions for contemporary social and economic problems that we face. To achieve this end, we employ new research methods, such as questionnaire surveys and economic experiments, and integrate other related disciplines, such as brain science, psychology and sociology, with more conventional branches of economics. While traditional economics has certainly been successful in yielding key insights on various problems surrounding our society based on human rationality, it has become increasingly clear that there are aspects of human behavior that cannot be fully captured by the conventional approaches. Among those issues that still remain largely unresolved are persistent recessions, the occurrence and burst of bubble economies, multi-debtor problems, environmental issues, and the roles of emotions and feelings in economic problems, just to name a few.

Behavioral economics—a new and emerging branch of economics—is an attempt to shed light on and incorporate our behavioral nature, in order to complement these missing aspects of traditional economics which rests on human rationality. In our preceding 21st Century COE project, we have conducted various questionnaire surveys and economic experiments, often in collaboration with researchers overseas from Yale University, Univeristy of Michigan, Hong Kong University of Science and Technology, and Fudan University, with a higher aim of becoming a research center for behavioral economics in Japan. All of our endeavors have resulted in many cutting-edge research papers, policy proposals, the inauguration of the Association of Behavioral Economics and Finance, and many young promising economists specializing in behavioral economics. The program also received the highest rating at the interim assessment of the 21th Century COE Program.

The GCOE builds on and develops the 21st Century COE in several directions. First, we will inquire further into the fundamental nature of human behavior. Second, we will apply insights gained from those basic researches to actual social and economic problems and seek for potential remedies for them. Third, we will conduct international comparative research, mostly based on experiments and surveys, and promote active collaboration with researchers overseas. Fifth, we will also promote interdisciplinary research such as neuroeconomics by working closely with bioscientists and medical scientists as well as by using fMRI data and twins data. Finally, we will place even more emphasis on the training of young economists. At the graduate level, upon successful completion of the core courses, we offer a systematic curriculum to equip students with analytical and writing skills necessary to conduct world-standard research, reflecting our strong belief that only with the sound basis of analytical skills can one proceed to analyze problems of more applied nature in our constantly changing society.



Human Behavior and Socioeconomic Dynamics

Organization

OSAKA UNIVERSITY

Osaka University continues to renew itself, breathing new life into all of its affairs, using the recent changes in Japan's system of university education as a particularly special opportunity to do so. After the merger with Osaka University of Foreign Studies on October 1, 2007, the university now consists of 11 Schools, 16 Graduate Schools, 5 Research Institutes, 2 Hospitals, 4 Libraries, 22 Joint-Use Facilities, 3 National Joint-Use Facilities, the WPI Immunology Frontier Research Center, the Center for Interdisciplinary Research and Education, Kaitokudo for the 21st Century, 4 Overseas Centers for Education and Research and the Osaka University Nakanoshima Center. The three campuses, Suita, Toyonaka and Minoh and the Nakanoshima Center occupy a total area of 1,588 million m^2. There are about 8,900 teaching, medical and administrative staff and 24,800 students including about 1,600 international students.

Schools and Graduate Schools

School of Letters Humanities	**Graduate School of Letters** Studies on Cultural Forms / Studies on Cultural Expressions Studies on Cultural Dynamics (Master Course)
School of Human Sciences Human Sciences	**Graduate School of Human Sciences** • Ethological Studies Laboratory Human Sciences / Global Human Sciences
School of Foreign Studies Foreign Studies	
School of Law Law / International Public Policy	**Graduate School of Law and Politics** • Center for the Practice of Legal and Political Expertise Law and Political Science
School of Economics Economics and Business	**Graduate School of Economics** Economics / Business and Management / Policy Studies
School of Science Mathematics / Physics / Chemistry / Biological Sciences	**Graduate School of Science** • Research Center for Structural Thermodynamics • Laboratory of Nuclear Studies Mathematics / Physics / Chemistry / Biological Sciences / Macromolecular Science Earth and Space Science
Faculty of Medicine • Hospital • Institute of Experimental Animal Sciences Medical School / School of Allied Health Sciences	**Graduate School of Medicine** • Center for Medical Research and Education • Center for Twin Research • PET Molecular Imaging Center (Established in June 2010) • Medical Education Center • Center for International Relations Physiological Sciences / Pathophysiology and Therapeutics Preventive and Environmental Medicine / Internal Medicine Surgical Medicine / Medical Science (Master Course) / Health Sciences
School of Dentistry • Hospital • Dental Technology Institute Dentistry	**Graduate School of Dentistry** Integrated Oral Sciences and Stomatology / Molecular Oral Biology and Dentistry
School of Pharmaceutical Sciences Pharmacy / Pharmaceutical Sciences	**Graduate School of Pharmaceutical Sciences** • Experimental Institute for Medicinal Plants • Center for Advanced Education and Research in Pharmaceutical Sciences • Center for Advanced Research and Education in Drug Discovery and Development • Life Science Young Independent Researcher Support Program Molecular Pharmaceutical Sciences / Applied Biopharmaceutical Sciences Environmental Pharmaceutical Sciences / Advanced Pharmaco-science (Master Course)
School of Engineering Applied Science / Mechanical, Materials and Manufacturing Science / Electronic and Information Engineering Sustainable Energy and Environmental Engineering Global Architecture	**Graduate School of Engineering** • Research Center for Ultra-Precision Science and Technology • Center for Atomic and Molecular Technologies • Frontier Research Center • On-site Research Center for Sustainability Design • Continuing Professional Development Center • Education and Research Center for the Advanced Structural and Functional Materials Design Advanced Science and Biotechnology / Applied Chemistry Precision Science & Technology and Applied Physics Adaptive Machine Systems / Mechanical Engineering Materials and Manufacturing Science Electrical, Electronic and Information Engineering Sustainable Energy and Environmental Engineering Global Architecture / Management of Industry and Technology
School of Engineering Science Electronics and Materials Physics Chemical Science and Engineering / Systems Science Information and Computer Sciences	**Graduate School of Engineering Science** Materials Engineering Science Mechanical Science and Bioengineering / Systems Innovation

(as of May 1, 2010)

Research Institutes

Research Institute for Microbial Diseases
- Animal Resource Center for Infectious Diseases
- DNA-chip Development Center for Infectious Diseases
- Research Center for Infectious Disease Control
- Genome Information Research Center
- International Research Center for Infectious Diseases
- Center for Genetic Analysis of Biological Responses

Institute of Scientific and Industrial Research
- Nanoscience and Nanotechnology Center
- Comprehensive Analysis Center
- Research Laboratory for Quantum Beam Science
- Center for Research Education and Training
- International Collaboration Center
- Post-Silicon Materials and Devices Research Alliances

Institute for Protein Research
- Research Center for Structural and Functional Proteomics

Institute of Social and Economic Research
- Research Center for Behavioral Economics

Joining and Welding Research Institute
- Smart Processing Research Center

Joint-Use Facilities

Low Temperature Center
Research Center for Ultra-High Voltage Electron Microscopy
Radioisotope Research Center
Research Center for Environmental Preservation
Center for International Education and Exchange
International Center for Biotechnology
Center for Quantum Science and Technology under Extreme Conditions
Research Center for Solar Energy Chemistry
Museum of Osaka University
Institute for Higher Education Research and Practice
Center for Advanced Science and Innovation
Health Care Center
The Center for Advanced Medical Engineering and Informatics
Center for the Study of Communication-Design
Center for the Study of Finance and Insurance
Renovation Center of Instruments for Science Education and Technology
Global Collaboration Center
Research Institute for World Languages
Center for Japanese Language and Culture
The Center for Environmental Innovation Design for Sustainability
(Known as Sustainability Design Center until October 2010)
Institute for NanoScience Design
Intellectual Property Center (I Prism)

National Joint-Use Facilities

Research Center for Nuclear Physics
Cybermedia Center
Institute of Laser Engineering

University Libraries

- Main Library
- Life Sciences Library
- Science and Engineering Library
- International Studies Library

Center for Interdisciplinary Research and Education

World Premier International Research Center

Immunology Frontier Research Center

Supervisory Office for Overseas Centers for Education and Research

San Francisco Center for Education and Research
Groningen Center for Education and Research
Bangkok Center for Education and Research
Shanghai Center for Education and Research

Kaitokudo for the 21st Century

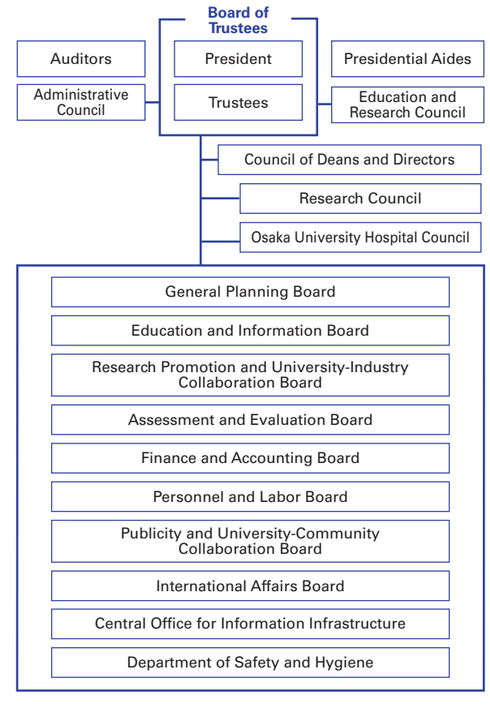
Osaka University Nakanoshima Center

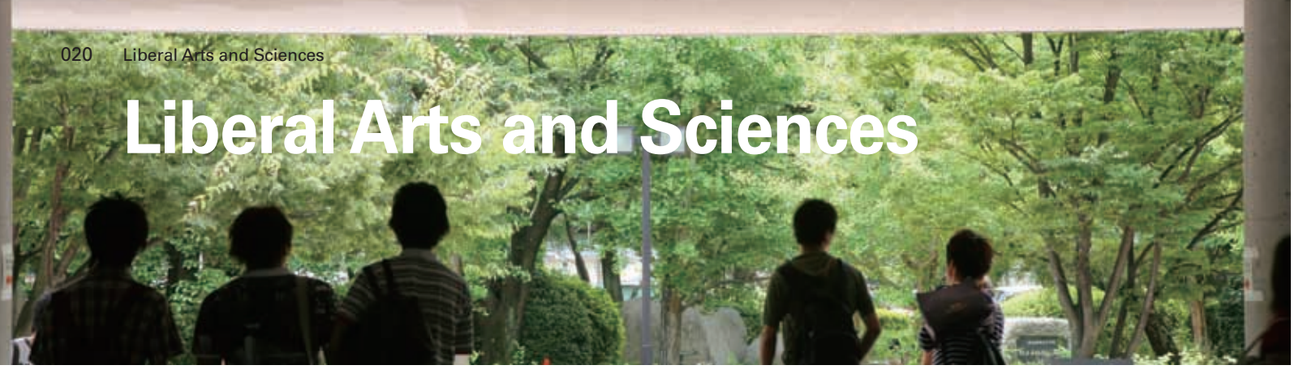
Administration Bureau

- Department of General Affairs
- Department of Planning and Publicity
- Department of Research Promotion
- Department of International Affairs
- Department of Finance
- Department of Information and Communications Technology Services
- Department of Student Affairs
- Department of Facilities
- Audit Office
- Office for the Proper Usage of Research Grants
- Safety and Hygiene Division

Graduate School of Language and Culture Language and Culture / Language and Society	
Osaka School of International Public Policy International Public Policy / Comparative Public Policy	
Graduate School of Information Science and Technology Pure and Applied Mathematics / Information and Physical Sciences Computer Science / Information Networking / Information Systems Engineering Multimedia Engineering / Bioinformatic Engineering	
Graduate School of Frontier Biosciences Frontier Biosciences	
Law School Legal Practice	
United Graduate School of Child Development, Osaka University, Kanazawa University and Hamamatsu University School of Medicine • Molecular Research Center for Children's Mental Development Child Development	

Governing Structure





Liberal Arts and Sciences

By cultivating true sophistication and keen judgment, develop people with true humanity.

Education of Osaka University is classified into two parts, Liberal Arts and Sciences programs and Major Courses. Major Courses, which require specific and special instructions, are taking charge only by the professors of each specific faculty. On the other hand, the teachers of whole university are taking charge of Liberal Arts and Sciences programs common to all faculties.

Liberal Arts and Sciences programs are organized to cultivate broad culture and synthetic judgment that flexibly correspond to progress of technology and social change, such as internationalization and high advancement in information technology. Liberal Arts and Sciences programs aim to develop people with fundamental techniques and good humanity.

Since the start of the 2004 academic year, the Institute for Higher Education Research and Practice operates the

classes and manages the curriculum of all liberal arts and sciences programs. The classes and the curriculum are composed by required subjects of freshman and sophomore, such as basic subjects of major courses and subjects of liberal arts and sciences common to all faculties. Almost all the classes are given on the Toyonaka campus.

Liberal Education Subjects

General education subjects

Liberal Arts General Education Courses

The groups of subjects listed below aim to facilitate acquisition of a scientific and interdisciplinary perspective vis-à-vis culture and the natural world, and furthermore to give students the power to solve the many different problems that exist in contemporary society. The educational ideas of Osaka University, namely "General Education and Culture", "An International Perspective" and "Design Ability" are constituted in the following 4 groups of subjects.

- **Basic Liberal Arts Subjects**
  The content of the various specialist fields within the arts and sciences is presented in an easily understandable way from the point of view of giving an "introduction" or providing "basic general knowledge and culture", or with the aim of equipping students with "thinking ability", and in each subject area students study the significance of basic knowledge and research.
- **Issues in Contemporary Society**
  The many different problem areas found in contemporary society, such as human rights, communication, juvenile crimes, order and public safety, and the environment are discussed from many different angles by a wide variety of specialist researchers, and these discussions are intended to serve as a stimulus to encourage thinking about the complex and difficult situation that we face at the present time.
- **International General Education**
  This group of subjects aims to equip students with the intellectual ability or with the conversational ability, general knowledge, manners and other skills needed to respond to the demands of an internationalized age. Included in the content are such items as linguistic culture (the formation and history of language) and the nation-state of Japan (modern and contemporary history and Japan's place in the world).
- **Advanced Liberal Arts**
  Cutting-edge research in the specialist fields housed within Osaka University is introduced in an easily understandable way so that students are able to savor the fascination and the real attraction of research. Lectures are also given by persons active in their specialist fields apart from the faculty of Osaka University.

Language and Information

Education Subjects to help them gain basic computer skills. This group seeks to improve communication skills in an age of globalization and information. The group consists of Foreign Language Education Subjects aimed at enabling students to acquire practical linguistic skills and Information Processing.

Foreign Language	First Foreign Language	• Subjects: English
	Second Foreign Language	• Subjects: German, French, Russian, Italian, Spanish, Chinese, Korean
	Selective Foreign Language	• Subjects: English, German, French, Russian, Chinese, Classical Greek, Latin
	Special Foreign Language	• Subjects: Swahili, Mongolian, Burmese, Turkish
Information Literacy and Processing		• Subjects: Information Literacy, Principles of Computers, Introduction to Information Science, E-society and Its Ethical Issues, Introduction to Computer Simulations, Introduction to Information Retrieval

First-year Seminar

Students work in small groups on themes provided by their instructor. The students present and discuss their own research: this helps them to develop their basic approach to research activity at the same time as enhancing their creativity and study motivation.

- **Subjects: Introduction to Clinical Philosophy, Children in Contemporary Japan, Human Movement and Sports, Physics in Extreme Conditions, Let's Enjoy DNA and Protein ! , etc. (187 subjects)**

Health and Sports

This group aims to familiarize students with the principles and practice of taking care of their own bodies, while enhancing their practical sporting skills, and deepening their scientific understanding of sport

- **Subjects: Sports Activities A, Sports Activities and Theory, Physical Fitness and Training A, Exercise Physiology and Health Science, Sports Activities B**

Major subjects

Basic Major Subjects

This group helps students to master the fundamentals needed to undertake the study of specialized subjects. The subjects are divided into those enabling students to understand the basic concepts of each specialty and those dealing with related themes.

- **[School of Letters, Human Sciences, Law, Economics] Elementary Philosophy A, Psychological Experiment, Jurisprudence, Economics A, Introduction to Sociological Studies on Social Environment, etc.**
- **[Faculty of Medicine, Dentistry, School of Pharmaceutical Sciences] An Outline of Philosophy, Psychological Experiment, Statistics B-I,Cell Biology A, Graphic Science A, etc.**
- **[School of Sciences, Engineering, Engineering Science]Calculus 1, Statistics C-I, Graphic Science A, Physics Experiments, Science Laboratory 1, etc.**

Letters

School of Letters

Humanities
- Humanistic Foundations
- Historical Cultures
- Area Cultures
- Linguistic Foundations
- Cultural Expressions
- Arts and Cultures

Graduate School of Letters

Studies on Cultural Forms
- Interdisciplinary Studies on Cultural Forms
- Philosophy
- Japanese Studies
- Japanese History
- World History
- Archaeology
- Human Geography

Studies on Cultural Expressions
- Interdisciplinary Studies on Cultural Expressions
- Japanese and Asian Literature
- Western Literature and Linguistics
- Japanese Linguistics
- Art Studies
- Art History

Studies on Cultural Dynamics (Master Course)
- Cultural Coexistence
- Arts and Media
- Literature and Environment
- Ecological Linguistics

An Interdisciplinary Approach to Japan and the Japanese Language

The School of Letters and the Graduate School of Letters at Osaka University are well known for the special fields of study on Japanese Studies and Japanese Linguistics, which are rarely offered by other universities. These two fields of study attract great interest from foreign researchers and accommodate a large number of foreign students.

Japanese Studies: A Diverse Approach to Research on Japan

Japanese Studies at Osaka University is designed not only for understanding Japan as an isolated cultural phenomenon but also for conducting comparative research from a global perspective involving the history of ideas, folklore, the science of religion, and the history of cultural exchange. In its early days study of Japan was an ad hoc, loosely defined area of study, conducted by gifted amateurs. What we offer is an interdisciplinary approach united under the rubric of Japanese Studies. This means that researchers are not bound to any one discipline, and may pursue their interests making use of a range of interdisciplinary tools. In line with reorganization which placed greater emphasis on graduate studies, the field of Japanese Studies initiated the “Seminar on the Methodology of Japanese Studies” in 1998. Organized with a focus on Master’s students, it also includes all five members of the teaching staff. In the seminar, each member of the teaching staff discusses the implications and the potential of Japanese studies from their respective areas. Graduate students are then called on to present their research findings, which is followed by a full-member discussion. Having more than one member of the teaching staff involved in each lecture is unusual, even at Osaka University. Nevertheless, it is extremely effective.

Japanese Linguistics: Increasing Interest in Japanese — Half of the Graduate Students Come from Overseas

Japanese Linguistics is not merely the study of grammar, but it is also the study of Japanese in comparison with other languages. Recent years have seen increasingly stronger interest in the Japanese language in other Asian countries, especially in China and South Korea. Major universities, have recently established faculties and departments of study that focus on the Japanese language. Increasing numbers of students choose Japanese as a second language. In Europe prestigious universities in Germany and France have also made the decision to set up faculties and research centers dedicated to the study of Japanese and Japanese Studies. In the past, Europeans studied Japanese as, for the most part, an “Oriental language,” such as Chinese and Korean. However, Japanese studies is now an independent field of study in these universities. Such increasing interest in Japanese, needless to say, is closely connected with the development of the Japanese economy. At the same time, it is also due to the needs of foreign researchers who are trying to gain access to Japanese culture and history. The field of Japanese Linguistics offers three main areas of study: Modern Japanese Linguistics,

Social Linguistics, and Japanese Pedagogy. Modern Japanese Linguistics is an area which researches the properties of modern Japanese with particular regard to its grammar, colloquy, and vocabulary. Sociolinguistics addresses the investigation and research of regional and social variations of the Japanese language and linguistic exchange in the Japanese language community. Applied Japanese Linguistics focuses on the learning of Japanese as a second language and research into inter-cultural communication. Approximately half of the graduate students in the field of Japanese Linguistics are non-Japanese, with the majority from Asia. Several research students from overseas also join the field every year. Many of these non-Japanese students proceed to the Doctor Course in hopes of becoming instructors or researchers of Japanese or Japanese Studies when they return to their countries. Furthermore, the Japanese Linguistics special course in the School of Letters has been designated by the Ministry of Education, Culture, Sports, Science and Technology as a special area of study to train instructors of the Japanese language.

A Variety of Different Approaches: Promotion of Active Fieldwork

Although the Bungakubu of Osaka University is known as the School of Letters, it not only includes traditional disciplines, such as philosophy, history, and literature, but also addresses unique fields of study, such as the Science of Arts and Japanese Studies. Education and research conducted within the School of Letters considers the fundamental nature of the human psyche from a broad range of viewpoints and ideas through the study of history and culture. The School of Letters offers a wide selection of fields. The school provides multiple courses pertaining to ideas, history, literature, society, languages, and art. There are as many as 20 undergraduate and 32 graduate fields of study. The fields include many rare special areas that may not be commonly found in the School of Letters in other universities, such as the Science of Dramatic Art, Japanese Linguistics, Musicology and Clinical Philosophy. Another distinctive attribute of the school is its active stance towards fieldwork. The School of Letters values an empirical approach that urges students to clarify their targets of study by collecting, analyzing, and organizing the relevant literature and data, and then verifying them through fieldwork. The fields of the Graduate School of Letters have contributed to promoting interdisciplinary joint research projects. While profoundly engaged in special research, both courses (undergraduate and graduate) proceed with interdisciplinary research through mutual exchange between their respective domains. Such joint research activities are not limited to the teaching staff and graduate students on campus, but also involve outside specialists and researchers. In addition to its many fields, the School of Letters also operates the Buried Cultural Assets Research Center. Machikaneyama, where the Toyonaka Campus of Osaka University is located, abounds with ancient relics that date back to the Yayoi Period (3rd century BC to 3rd century AD). In cooperation with the Archaeological Research Office, the Center is responsible for the examination of Yayoi-period relics and the storage of unearthed relics and relevant data. Working in cooperation with local communities is another important aspect of the School of Letters. One example of this is the school's determination to preserve the Kaitokudo, a building dating back to the Edo Period, one of the earliest colleges in Osaka. The school operates the Kaitokudo Commemorative Society in cooperation with private organizations. Among activities the Society actually hosts are biannual memorial lectures given by lecturers of Osaka University as well as of other universities in spring and fall, and regular classes on classical literature for citizens (meetings for reading classical literature). Of the open lectures held thus far, one symposium held in November 1998 to commemorate the 50th anniversary of the School of Letters created a stir in academic circles. It was titled "Is the School of Letters Still Necessary? — Towards Humanities for the 21st Century". The symposium was very emphatic that the humanities should play a key role in the 21st century. For example, Professor Kawakita Minoru, who specializes in European History, asserted: "We cannot resolve the problems of the weapons of mass-destruction and the global environment that we will be confronted with in the next century by resorting to mere science and technology or economics in the narrow sense of the word. What we need is a humanistic point of view that valorizes culture in a proper way."

Photo shooting unearthed articles

Excavation and research

60 to 70 Students from more than 20 countries are on the Full-time Register

The School of Letters and the Graduate School of Letters, Osaka University, encourage international exchange. The teaching staff includes lecturers from overseas. Several research fellows are also accepted every year. Every school year, 50 to 60 non-Japanese students from more than 20 countries are registered in the School of Letters and the Graduate School of Letters. An international exchange committee is set up in the School of Letters as an inter-faculty committee to coordinate international activities at various levels. For exchange agreements with overseas universities, the Graduate School of Letters took the initiative in securing agreements with McGill University of Canada and the Australian National University of Australia at all-campus levels. In 1980, a counselling room for overseas students was set up to offer advice to students from abroad. When the International Exchange Office in the School of Letters was founded in 1982 with the aim of promoting scientific exchange between instructors, the counselling room was moved into that office. The center-sponsored parties became a winter event in the School of Letters, where overseas students, Japanese students, and instructors establish friendships and deepen academic ties.

Clavichord workshop

Human Sciences

Sandplay technique as one of the most useful tools for psychotherapy, which effectively activates patients´ inner self-healing process and shows us hidden wondrous functions of human psyche.

School of Human Sciences

Human Sciences
- Behavioral Sciences
- Sociology, Modern Thought and Anthropology
- Education
- Global Human Sciences

All-English Human Sciences Undergraduate Program

- Global Citizenship Course
- Contemporary Japan Course

Graduate School of Human Sciences

Human Sciences Department
- Advanced Studies of Human Sciences
- Psychology
- Behavioral Sciences
- Sociology
- Modern Thought and Anthropology
- Clinical Pedagogy
- Educational Environment

Global Human Sciences Department
- Human Development Studies
- Area Studies

Graduate School of Human Sciences

Since the Graduate School of Human Sciences was established in 1976 it has followed the groundbreaking path of integrating the sciences and the arts conceptually and practically to generate a comprehensive and relevant understanding of human beings and the societies that they create around them. To realize its mission, the Graduate School has emphasized the utilization of empirical, practical, and in some fields, clinical research methodologies that feed directly into the learning environment. The focus is firmly on studying animals to some extent and real people and real communities - through fieldwork, interviews, and questionnaire data collection.

In order to provide students and faculty with an excellent research and learning environment, we have successfully sought additional support from the Ministry of Education, Culture, Sports, Science and Technology (MEXT). In academic years 2005-2006 and 2006-2007 we secured funding through the Good Practice Program sponsored by MEXT for our project Human Science Education Aimed at Producing Practical Researchers. This resulted in a number of effective, intensive and attractive activities to improve graduate-level education, placing particular emphasis on nurturing students' practical research skills.

Following on from this highly successful project, for the last three years the Graduate School has enjoyed support for a second program, Promoting the Use of Human Science Data in General and Professional Education under MEXT's Support Program for Improving Graduate School Education. For three years, we have been able to focus on pursuing a new form of data-based education. As with the Good Practice Program of academic years 2005-2006 and 2006-2007, the aim continued to be to turn students into practical researchers who make a positive contribution to society in a variety of fields and social and cultural settings.

Human Sciences Department

Advanced Studies of Human Sciences

This is a project-orientated, multi-disciplinary course concerned with issues that require urgent attention in the world. The Course of Advanced Human Sciences is currently divided into four research areas: (1) Mind and Brain Science/Human Sciences of Disaster Mitigation (2) Communication and Media (3) Bio and Social System, and (4) Internationalization of Education. A dominant feature of these research areas is close interdisciplinary cooperation. This program of study aspires to combine the humanities and sciences to create new human sciences that tackle contemporary issues.

Psychology

This course employs integrated, multidisciplinary research methodologies to elucidate the laws that underlie human behavior in various psychological and social settings, and aspires to solve real-life problems related to human behavior. The Psychology course comprises of the areas (1) Fundamental Psychology, (2) Applied Cognitive Psychology, (3) Social Psychology, (4) Clinical Thanatology and Geriatric Behavioral Science, (5) Environmental Psychology, and (6) Applied Psychology/Sciences of Volunteer Activities.

Behavioral Sciences

In this course, we study the behavior not only of humans but also animals employing various methods through the approaches of phylogeny and ontogeny. These two approaches are essential for understanding human behavior. Emphasizing the biological components of the mechanisms of the expression of behavior, the members of the Behavioral Sciences course strive to elucidate the characteristics of human and animal behaviors. The five research areas in the course are: (1) Comparative and Developmental Psychology, (2) Behavioral Physiology, (3) Behavioral Data Science, (4) Biological Anthropology, and (5) Ethology.

Eight-year-old females with their infants in a free-ranging group of Japanese monkeys

Sociology

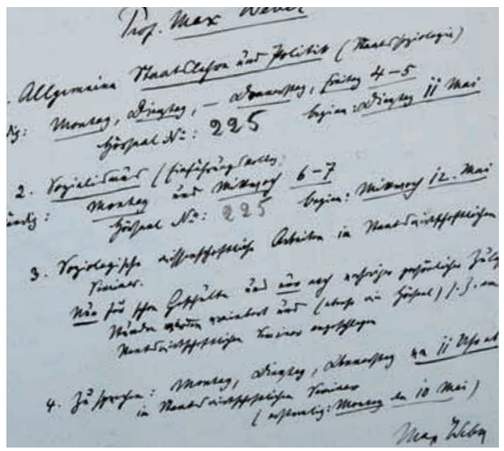
Sociologists in the Graduate School of Human Sciences continue to develop analytical tools and theories for measuring and understanding the increasingly complex relationship between macro-historical forces and the agency of living humans in micro-social environments. The Sociology course is particularly strong in the areas of (1) Sociological Theory, (2) Sociology of Modern Society, (3) Empirical Sociology, (4) Social Data Science, (5) Sociology and Communication, (6) Sociology of Culture, and (7) Studies of Welfare Society and Social Policies. Social justice is an important shared goal of our diverse research program.

Modern Thought and Anthropology

In the Graduate School of Human Sciences, Modern Thought and Anthropology form one area of study. Both address the fundamental question of what it means to be human today. The two fields are characterized by a variety of methodological approaches. In Modern Thought, the approach is largely theoretical. The three main areas are: (1) Analytical Philosophy, (2) Contemporary French Thought (including the philosophy of life sciences and phenomenology), and (3) Comparative Study of Civilizations. In Cultural and Social Anthropology, the focus is on the relationship between people and the cultures or societies in which they live in. The methodological approach is mostly empirical, and ethnographical fieldwork sites include Asia, South America, Africa and Oceania. Research topics cover a wide range of issues, including war, conflicts, and global migration.

Clinical Pedagogy

In contemporary studies of education we need to synthesize and systematize the knowledge from different disciplines and present a new perspective on how humans live. Clinical Pedagogy consists of five areas of focus: (1) Anthropology of Education, (2) Educational Psychology, (3) Educational Technology, (4) Educational Communication Science, and (5) Clinical Psychology.



Max Weber´s public announcement of his courses for summer semester 1920

We focus on issues related to human development in the context of rapid social changes, such as urbanization and internationalization. We observe these changes as our society makes a rapid transition to an aging, lifelong learning, and information-oriented society.

Educational Environment

Educational Environment examines the human, material, spatial, and temporal aspects of the environment surrounding us and considers their impact on human growth and development from birth to adulthood. The course consists of four areas of focus: (1) Sociology of Education, (2) Educational Policy and Administration, (3) Lifelong Education, and (4) Cultural Studies of Education.

From this photo we can discern such themes as development (clean water supply), dissemination of small arms, and a culture of violence/tolerance, all of which are anthropological issues.

Global Human Sciences Department

Human Development Studies

Specialized areas of focus within the Human Development Studies course are: (1) International Collaboration, (2) Post-conflict Reconstruction and Development, (3) International Community Development, (4) Interdisciplinary Studies of Multicultural Societies and Issues, and (5) Human Environment Studies.

Area Studies

The Area Studies course takes a conventional approach in this field by seeking out the special characteristics of local communities, whilst simultaneously searching for new ways of understanding the local in the context of an increasingly complex global environment. Specialized areas of focus are (1) Area Studies on Dynamics, (2) Studies on Transnationality and Deterriorization, (3) Regional Order Studies, and (4) Area Studies on Knowledge.

All-English Human Sciences Undergraduate Program

From October 2011, the School of Human Sciences, Osaka University will be offering the new Human Sciences English Undergraduate Degree Program which takes a step further our international orientation. It aims to cultivate self-motivated and reflective students with a sophisticated knowledge base and the necessary practical skills to meet the challenges that they will face in our fast-changing, globalized world. The program is being launched with two courses: Global Citizenship and Contemporary Japan. Both courses include Japanese language education in addition to the main studies component being delivered in English.

Global Citizenship Course

The Global Citizenship Course is intended to provide a learning environment where students can acquire the necessary knowledge, skills and mindset for reflecting critically on and engaging positively with global issues. It is particularly aimed at those students hoping to work in international agencies including the UN, NGOs, municipal agencies and Corporate Social Responsibility (CSR) sections of global and Japanese businesses. Areas include Global Cooperation, Democracy and Diversity, Disaster Management and Interdisciplinary Studies of Multicultural Societies. This course explores the limits and potential of citizenship in a world of massive global migration, and huge demographic shifts within nations and communities.

Contemporary Japan Course

The Contemporary Japan Course aims to provide students with a social science-leaning Japanese studies curriculum that encourages the development of informed, critical and multicultural perspectives on contemporary Japan, Japanese culture and its international relations in the world. In line with Japanese studies curriculums delivered internationally, the studies component of this major is delivered in English. The content of this course recognizes Japan as an important economic, technological, political and cultural player on the world stage as well as the producer of diverse and exciting local- and sub-cultures.

Foreign Studies

Educational Goals

Our goals are to promote education and research in foreign languages and cultures, both in theory and practice, to instill broad knowledge in the students so that they can contribute to the world community, and to nurture their deep understanding of foreign affairs.

To achieve these goals, SFS offers 25 modern languages as majors and many other ancient and modern languages as minors. During the first and the second years, the students are to take one foreign language as their major language, together with core introductory subjects in various academic disciplines.

In the final two years they will study their major language at a more advanced level, along with a problem-oriented research related to a particular academic discipline of their choice.

Historical Description

The School of Foreign Studies (SFS) was first established in December 1921 as Osaka School of Foreign Languages at Uehonmachi, Osaka, committed to international peace and amity. It was financially helped by the donation of ¥1,000,000 by Choko Hayashi, an Osaka businesswoman. Having survived the Second World War, it moved to Takatsuki and then back to Uehonmachi, Osaka. In 1979 it moved again to a new location in Minoh City for more extensive academic activities. On October 1, 2007, it became part of Osaka University as School of Foreign Studies.

School of Foreign Studies

Foreign Studies

- Chinese
- Korean
- Mongolian
- Indonesian
- Filipino
- Thai
- Vietnamese
- Burmese
- Hindi
- Urdu
- Arabic
- Persian
- Turkish
- Swahili
- Russian
- Hungarian
- Danish
- Swedish
- German
- English
- French
- Italian
- Spanish
- Portuguese
- Japanese

"Let Language be your Wings to the World"

What is "Foreign Studies"? Why are we not just called "School of Foreign Languages"? Well, there are good reasons.

Globalization has been going on in many ways; people, capital, and information, they never stay put in a single place but circulate on a global level. We witness changes in businesses, politics, and cultures almost on a daily basis. The changes certainly are not taking place just at remote places far from where we live. They are right in front of us and all around us, and we are in the middle of them, be it in our workplaces, in our neighborhoods, or in our city streets. Look around. Visible signs are everywhere. We see an increasing number of people of different nationalities or cultural backgrounds every day and everywhere. Japan is in the middle of all this, as many other countries are, and that is what it means to be living in today's world—internationalization within and without.

Within—As different cultures come into contact or even mingle together, our minds and attitudes get influenced and become richer in kind, our ways of living improve, and many other not immediately foreseeable good things may take place. Yet, at the same time, we may witness frictions, pressures, and collisions because of cultural differences. The more multicultural we become, the more need there will be for people who can act as cultural bridges, whose job it is to help different people understand each other.

Without—These days, military conflicts arise almost routinely in many parts of the world, or poverty strikes, and environmental problems beleaguer many nations. Consequently, there is need like never before for coordinated global cooperation and aide through international organizations, governments and NPOs. In turn, these groups need employees who can function in at least two languages and cultures if they are to help different peoples work together.

Within and without, there is a need—urgently felt—for more qualified people to help those of different cultural backgrounds and nationalities understand each other and communicate with each other. Locally and internationally, we need people who have a deep understanding of both language and culture.

Learning culture through language and learning language through culture—that is the core of what it means to do foreign studies. One without the other is never complete. We teach both language and culture. The School of Foreign Studies is an ideal place for those of you who aim to become experts in both.

Law and Politics

School of Law

Law
International Public Policy

Graduate School of Law and Politics

Law and Political Science
- Public Law and Policy
- Comparative Law and Politics
- Intellectual Property Law

Solid Tradition and Innovative Spirit

The Faculty of Letters and Law was established at Osaka University in 1948, only three years after the end of World War II. It was the first academic body for humanities and social sciences at the university. Five years later, in 1953, as part of a fundamental restructuring of the university, the faculty was divided into separate faculties, Law, Letters, and Economics. Since then, the Faculty of Law has developed steadily, maintaining a healthy respect for both tradition and innovation as it has grown. Now the Faculty of Law, which started with only 16 professors in 1953, has about 60 full-time professors and is widely recognized as one of Japan's top-ranking institutions for legal education and research. In 2008, the Faculty celebrated its 60th Anniversary.

The Faculty of Law offers an undergraduate program, officially called the School of Law. In 2008, it was divided into two departments, the Department of Law and the Department of International Public Policy. Two hundred and fifty students enroll every year and the student-faculty ratio of the program is ideal.

The Faculty of Law also offers a graduate program, officially called the Graduate School of Law and Politics. Currently, there are 82 students in the master's program, of which 31 are international students, and there are 38 students in the doctorate program, 4 of whom are international students. The master's program of the Graduate School of Law and Politics consists of three sub-programs with different goals and curricula: Public Law and Policy, Comparative Law and Politics, and Intellectual Property Law. The goal of the Public Law and Policy Program is to provide future professionals with advanced knowledge and expertise in law and political science, whereas the Comparative Law and Politics Program is aimed at providing high level skills in research and scholarship for those interested in an academic career path. The Intellectual Property Law program is specifically for future specialists of that field.

Meeting Current Needs

Legal Informatics, Intellectual Property, and International Cooperation

Today, both the legal profession and the broader society are changing at a rapid pace. Law schools cannot remain aloof from emerging trends and needs in society. We need to be constantly ready to adapt our facilities and curriculum to reflect and respond to the latest technology and the newest thinking in law and society, while nonetheless preserving the academic heritage of traditional jurisprudence.

The School of Law was among the first institutions in Japan to offer legal informatics within its core curriculum, at a time when most lawyers in the country were still adhering to a traditional and increasingly anachronistic style of legal research. Now all undergraduate students acquire computer skills, which are indispensable for law students of the twenty-first century, and learn basic information processing, which enables them to efficiently search for legal precedents and cases in on-line databases. We continue to make efforts to advance in this area, as is reflected in the recent development of multi-media seminar and conference rooms.

As a leading academic institution in both legal education and research, we view it as one of our missions to contribute to the wider society by developing the human capital, ideas, and intellectual innovations that are essential for its evolution and increasing welfare. The Graduate School of Law and Politics accepts a number of government workers every year as regular students and special auditors. In our program, they can connect their practical experience with academic training to advance their ability to deal with today's challenging administrative tasks. Additionally, the Intellectual Property Law Program, which was set up as a sub-program of the graduate program in 2008, is aimed at training the IP experts that Japan will be relying on for the achievement of its visions for the future.

Our concern is not only domestic, however, as we also focus on contributing to the international community. The Graduate School of Law and Politics organizes training courses for government officials and legal specialists from developing countries in cooperation with the Japan International Cooperation Agency (JICA), which is an essential part of Japan's technical assistance for judicial and administrative institution-building in Asian and African countries. This is but one example among many of our active cooperation with institutions and organizations beyond our campus to both fulfill our responsibilities as a leading academic institution, and to enhance the richness of our own academic program.

Active Alumni Support

For sixty years, thousands of students have graduated from the School of Law and the Graduate School of Law and Politics. They have been playing essential roles in the legal profession, government, business, industry, and academic institutions, both in Japan and around the world. We are proud of their contributions, which have been made in virtually every aspect of society. In particular, our alumni include a large number of lawyers. About 450 graduates are currently practicing law not far from the campus. They maintain close relations with the faculty, and provide valuable input in our curriculum development, advising us of new developments emerging in the profession and the legal system. An example of this process may be seen in an undergraduate course that is taught every year by alumni lawyers. In every class of the course, the instructors raise real-world issues that are currently preoccupying the legal profession, in such areas of interests as intellectual property rights, the present situation of the judicial system in China, medical malpractice suits, violations of human rights, and so on. Alumni Lawyers frequently invite students to their law firms and encourage frank discussion with their colleagues in an informal and open atmosphere. It is easy to imagine how such experiences effectively foster in young law students an interest in joining the profession and working for social justice.

Alumni working in other fields also help us as excellent part-time instructors. Classes taught by executives and legal experts in leading companies in Japan, and government officials playing important roles in the making of public policy, are viewed by the students as being interesting, meaningful, and ultimately motivating, and the instructors, as alumni of the school, serve as important role models for the students.

Toward a Globally Attractive Law School

The School of Law and the Graduate School of Law and Politics are actively promoting international exchanges with twelve prestigious law faculties around the world based on inter-faculty academic exchange agreements. Among the most essential objectives of these agreements is to expand the student exchange program. Every year, the School of Law and the Graduate School of Law and Politics attract a large number of international students, from other Asian countries in particular, who are interested in acquiring knowledge of Japanese law, and adapting it for use in their own countries.

However, the language barrier, which is unfortunately quite high, has long prevented a number of enthusiastic students from studying what we think is a unique and interesting legal system. We are working to improve this situation by offering more courses on Japanese law taught in English in the spring semester, so that more students may obtain easier access to an understanding of the Japanese legal system and legal culture. Courses such as "Introduction to Japanese Law," "Topics in Japanese Law," "Topics in East Asian Law," and intensive seminars on comparative law are scheduled for the 2011 spring semester. Many Japanese students also attend the courses taught in English, such that these courses provide just as much a forum for interaction and exchange of ideas among students from Japan and those from abroad, as do the mainstream classes taught in Japanese.

To meet the needs of international students, the School of Law and the Graduate School of Law and Politics has set up an International Student Consultation Room. Here, a full-time faculty member and an experienced counselor, who are in charge of taking care of international students, provide advice and support upon request, on issues such as the students' research and everyday studies, and personal issues or problems relating to life off campus. This helps students to focus on their studies safe in the knowledge that a system exists to assist them if problems occur. In addition, we have an assigned tutor system. Each new international student will be provided with his or her own Japanese undergraduate or graduate student as a tutor who can provide assistance with the academic demands of the program.

Training course on local government reform

Student column

Name
School/Graduate School at Osaka University (Grade)
Home School/University, Home Country

Klara Hrvatin

Graduate School of Letters(Doctor's year 2)
University of Ljubljana, Slovenia

What made me want to study abroad? I once asked the same question to an English friend of mine living in Japan and he said: "*It is a destiny*". Well, as it is hard to question the destiny, what I can say for myself is I always had interest in different languages, culture, people, and minds. Studying Musicology and Japanology at Faculty of arts back in Slovenia and graduating from the field of Japanese music, I felt that only by studying abroad—namely in Japan—I could really deepen my studies and obtain greater understanding of Japanese culture.

Why I chose Osaka University is because of my mentor Nobuhiro Ito, a professor at the Osaka University's department of Musicology and Theater Studies. He showed interest in my research topic, kindly accepted me as his student and was willing to help me during my studies.

I completed a research in which I examined a folk song from one of the richest folk song regions in Japan—the folk song *Kagura mai* from Gokayama. I focused on how the song's musical context and its function have changed—from the song's first scientific study in the 1950's until today. My latest research is about Tōru Takemitsu (1930-1996), one of the most pervasive, original and internationally recognized Japanese composers of 20th century. I intend to take a closer look at his music for dramatic media including art films and animations, documentaries and commercial motion picture, etc.

How about the future? At first I think it is very important to continue with interesting and good research. Later it would be powerful to hand over some of the knowledge to my home university in Slovenia, where the field of Japanese music is not so well-known yet.

What best describes the key to the future is at first *to listen to your heart*: reflect into yourself what you really want to do, what kind of study are you interested in and then take all the time, the hard work and effort needed to complete the study profoundly. Another good key is also *to have a good relationship* with your professor and friends; *to build bridges* between your university and Osaka University and in this way *expanding the knowledge*.

Osaka University provides good surrounding for my studies. Our department (Musicology and Theater Studies) is not numerous and as such offers an individual relation with professors and students. It is involved in international conferences and forums, concerts, workshops and other events, which broaden my knowledge. Besides, it takes part in the Erasmus Mundus Master Program (Euroculture); an exchange program for Japanese and overseas students which provides trans-cultural education and research environments.

An Tingting

School of Human Sciences (Bachelor's year 3)
Dalian University of Foreign Languages, China

I was 19 years old when I first came to Japan. It was an age when I was full of curiosity and hope. On reflection, it was lucky that I came to Japan for many reasons and it has turned out that I have made the right decision.

At Osaka University throughout the first year and during the first semester of the second year, students are given the opportunity to choose courses from various fields to help us decide which area we want to specialize in for our degree. International students can also take courses to improve their Japanese language skills and gain a deeper understanding of Japanese culture. Osaka University also offers academic and living support for international students as well as various activities. With a variety of support, we are able to make many friends from different countries and enjoy campus life here.

As a regular student of Osaka University, I had the chance to do a half-year exchange program at Adelaide University in Australia with a scholarship. I really appreciate that I had the opportunity to go to an English speaking country to experience a different education system and culture. Being able to improve my English while studying Psychology at Adelaide University has contributed to building a solid academic foundation for future study and research.

At the moment, I am studying Clinical Psychology in the Faculty of Human Sciences. I am passionate about studying psychology and I would love to continue in psychology research in my academic career. In the future, I hope to go back to China to continue research and share the skills and knowledge that I have learned here. I hope I can make a contribution to the field of Clinical Psychology in China and also in the wider world.

Tero Vattukumpu

School of Foreign Studies (Bachelor's year 2)
Kuninkaantien lukio High School, Finland

After I took my first Japanese lesson some years ago at high school I knew that Japanese would be something I would definitely like to study as my major at university. The chances to major in Japanese at any university in my home country are relatively limited so I decided to do my best in order to get the opportunity to study at a Japanese university—and here I am!

The main reason why I ended up choosing the Japanese major at the School of Foreign Studies of Osaka University is that I believe this to be not only a place where one can do high-quality research on Japanese, but also one where a foreign student can enjoy excellent teaching of Japanese as a second language. In addition to that, the chance to study many other languages as well was another reason why I decided to apply for the School of Foreign Studies.

As I am still a second year student not all the main courses of my major have started full-scale yet. Therefore, I still have time to think about the field of study on which I will focus starting from the third year. For example, I am taking courses on subjects such as Japanese language teaching, Japanese linguistics, Contrastive linguistics, General linguistics, Altaistics, Korean, Tibetan and of course regular Japanese lessons among others during this second year at Osaka University.

I hope I will be able to use all the knowledge I am gaining here in an occupation needing all my Japanese language skills in the future. I am sure that I am studying at the right place in order to achieve my dreams.

Osaka University is definitely a good place to study with its great facilities and its location in the beautiful city of Osaka in the middle of the Kansai region with its long history and rich culture.

Ajaree Wongwan

Graduate School of Law and Politics (Master's year 1)
The Demonstration School of Silpakorn University, Thailand

My first time to stay in Japan was when I was 16. I had the opportunity to be an AFS student and to stay with a Japanese family. I went to a Japanese high school for 2 weeks. At that time, I couldn't speak Japanese at all, but everyone tried to communicate with me. When I got back to Thailand, I kept in contact with my host family and Japanese friends and really wanted to go back to Japan to see everyone. Luckily, I got a scholarship from the Thai government to study abroad, and Japan was the only choice that I could think of.

When it was time to choose a university, I didn't hesitate to choose Osaka University, because there are lots of Thai people and foreign students studying here, making the university more of a multi-cultural society, which I really like. Moreover, Osaka University also has many great professors. I'm currently majoring in International Private Law. My research is about international arbitration. I often face minor difficulties with studying, but every problem is always resolved wit the help of my friends, seniors, tutor, as well as the friendly people at the international student consultation room. After graduating from here, I will go back to Thailand and work as a government officer. I'm sure that my research will be useful in my country.

And last but not least, I'd like to tell everyone that Osaka University is a very nice place to study—and not only from an academic perspective because the atmosphere is very nice and the people are very friendly. It only takes about 20 minutes to get to the heart of the city, where you can go shopping or sightseeing or just hang out with your friends. Experience it for yourself, and you'll fall in love with this university as I did.

Economics

School of Economics

Economics and Business
- Economic Theory
- Economic Policy
- Economic History and Business History
- Japanese Economy
- Managerial Economics and Accounting
- Management Science
- Management Information

Graduate School of Economics

Economics
- Theoretical Analysis
- Policy Analysis
- Historical Analysis

Policy Studies
- Applied Economics

Business and Management
- Modeling Analysis
- Management Information
- Technology Management
- Business

Editing a Leading Economic Journal in Collaboration with the University of Pennsylvania in the U.S.A.

The School and Graduate School of Economics at Osaka University demonstrate their academic excellence by publishing the latest findings to the world. The Institute of Social and Economic Research, which plays an important part in the education of students in the Graduate School of Economics, edits one of the world's most authoritative economic journals, the *International Economic Review*, in collaboration with the University of Pennsylvania. Papers are screened by anonymous referees who maintain stringent standards, which results in its academic significance. In the discipline of Economics, Osaka University is the only university in Japan that edits such an internationally recognized academic journal.

Furthermore, many of the faculty members in the Graduate School of Economics serve on the editorial boards of leading journals around the world. They are also actively engaged in joint-research with foreign-based economists and hosting international economic conferences. Memorably, on the 50th anniversary of the School of Economics, in 1998, over 40 world-renowned scholars and researchers were invited to attend a conference sponsored by the School of Economics at Osaka University with co-sponsorship of the National Bureau of Economic Research (NBER).

Osaka University also holds number one status as the leading Japanese university for papers and notes accepted in *Japanese Economic Review*, a journal issued by the Japan Economic Association, the largest economics organization in Japan. The screening of this journal, as with the *International Economic Review*, is done by third-party evaluators, and the papers accepted are considered to have world-class quality.

In terms of the number of commentators and chairmanship in the annual meetings of the association, Osaka University here again enjoys prominence. These facts attest to the vigorous research activities being done at Osaka University.

In western countries, graduate-level education is often offered at prestigious universities, or so-called "Research Universities". Osaka University claims to be one of the best "Research Universities" in Japan and offers an ideal academic environment, in which students can interact with top-level researchers who undertake significant, often ground-breaking research.

Economics Open to the Community

In the tradition of "Kaitokudo", a learning place for the common people during the Edo era, Osaka University places a great significance on practical learning. As the disciplines of economics, management and business concern phenomena in human society, it is important to cultivate an attitude of learning derived from real world contact and experience and, at the same time, to transmit academic findings back into the community.

Accordingly, we highly value exchange and cooperation with the local community.

Our Open Contributory Seminars where members of society can freely participate represent such efforts. Financed by contributions from private enterprises and organizations, the seminars address contemporary issues in modern economics, management and business. The lecturers are faculty members of the School and Graduate School of Economics, and experts are also invited from the public and private sectors.

Since the first one-year open seminar on "Investment Trust" started in April 1990, seminars have subsequently been offered on such topics as "International Harmony", "Economics of Risk and Information" and "Tax Reform and Tax Theory".

Latest Research in Modern Economics Aims to Foster Students for Leadership and Senior Management

Around the time when the School of Economics at Osaka University was founded in 1953, economics in the world was divided into two main branches, Modern Economics and Marxian Economics. Mainstream education and research at universities in Japan was based on Marxian Economics. From the very beginning, however, Osaka University placed modern economics at the core of its education and research program and has consistently been at the forefront of studies in modern economic theory. The School has been striving to establish a unique approach to economics through open exchange with society, by actively recruiting young, spirited scholars from all over the country. It has achieved such a number of cuttingedge achievements that it has come to be known as a "Mecca of Modern Economics." With the demise of the socialist economic block , Modern Economics has become the economics of today.

The School and Graduate School of Economics at Osaka University feature a systematic curriculum that allows students to choose from two disciplines of economics and management and business. Following the tradition of practical learning, emphasis is placed on quantitative methods (statistical analysis and information processing) to promote empirical education and research. Course subjects are offered in suitably small classes, one of the School's most attractive features.

The Graduate School of Economics offers three major programs: Economics, Policy Studies and Management and Business. The Economics Program, designed to nurture excellent academic researchers, features the study of modern economics as well as economic and business history with emphasis on quantitative approach, creativity and rigor in logic. The Policy Studies Program, which offers subjects mainly for those who wish to pursue careers as economists or analysts outside the academia, focuses on developing the ability to apply tools of modern economics to the analysis of real world problems. The Management and Business Program emphasizes corporate management through a scientific approach. This Program aims at training students not only to become top researchers, but also analytical specialists who should play vital roles in the business world. Notably, the three-year MOT course, offered jointly with the School of Engineering, allows students to obtain two master degrees, engineering and business, at the same time. In 2008, we started a new area of research in the Major of Management and Business: the Global Management Course, which aims to raise capable individuals who have a thorough grounding in global perspectives and strong management skills to manage urban and regional developments as well as technological advancement.

As faculty members are hired solely on merit, there is no almamater clique among faculty, which is rare in Japan. Compared to other national universities, where own graduates account for 60 to 80 % of the staff, faculty graduated from Osaka University occupy only one third of the staff. The rest come from various institutions throughout Japan.

This is one of the reasons why a liberal academic atmosphere prevails at the School and Graduate School of Economics at Osaka University.

Fully Equipped with Computers, Professors with Rich International Experience

With the advance of information and communication technology, the use of computers has become indispensable in research activities in economics, management and business.

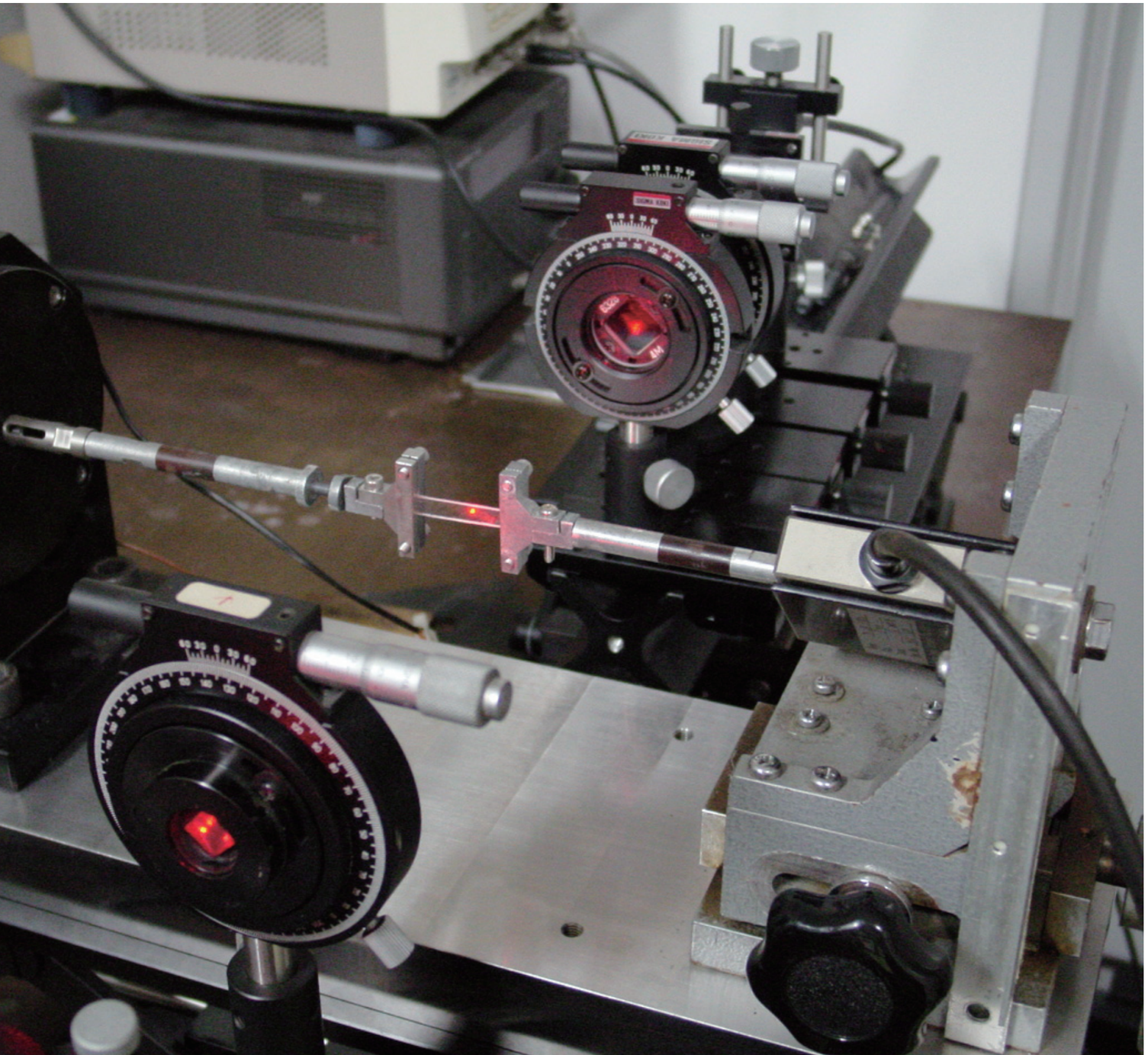
The School and Graduate School of Economics are fully equipped with their own computer facility, which together with the service provided by the university-wide Cybermedia Center, offers the students a wide range of IT services.

All the computer faculties in the School and Graduate School offer 24-hour online access to information sources around the globe. We provide various softwares as well as extensive databases for the exclusive use of students and faculty in their research work. A large amount of data is accessible, ranging from comprehensive economic files, financial data, business finance data, other statistics and survey data in addition to the world economic data provided by international organizations such as the OECD and the IMF.

The School operates in an environment condusive to the internationalization of students. In economics, management and business, this is indispensable for acquiring a cosmopolitan outlook in response to economic globalization. Osaka University has promoted the employment of foreign instructors as well as Japanese staff with international background who give lectures in foreign languages.

We have close relations with about 20 overseas universities under our Academic Exchange Programs. A number of international students are regularly enrolled in the School. They are from various countries including Australia, the U.S.A., Israel, China and South Korea. In 1994, the International Students Office was established in our School in order to deal with their concerns, both academic and of everyday life.

Science



School of Science

Mathematics
- Mathematics

Physics
- Physics
- Earth and Space Science

Chemistry
- Chemistry
- Macromolecular Science

Biological Sciences
- Biology

Graduate School of Science

Mathematics
- Algebra
- Geometry
- Analysis
- Experimental Mathematics
- Global Geometry and Analysis
- Applied Mathematics

Physics
- Condensed Matter Physics
- Physics of Particles & Nuclei
- Fundamental Physics
- Quantum Physics
- Interdisciplinary Physics

Chemistry
- Inorganic Chemistry
- Physical Chemistry
- Organic Chemistry
- Interdisciplinary Chemistry

Biological Sciences
- Molecular and Cellular Biology
- Cellular Biology
- Adaptation Biology
- Correlation Biology
- Structural Biology

Macromolecular Science
- Macromolecular Synthesis and Reactions
- Macromolecular Structure, Properties, and Functions
- Macromolecular Assemblies

Earth and Space Science
- Astrophysics and Planetary Science
- Earth and Planetary Material Science
- Extreme Material Science

A Fusion of Tradition and New Fields

A wide-ranging research program focusing on fundamental problems as well as current issues

The Graduate School of Science, one of the oldest at Osaka University, carries out basic research in the natural sciences.

Mathematics is one of the foundations of all science, but recently it has come to be applied to non-science disciplines as well. A new initiative in computer science has also begun.

Physics is also one of the oldest departments in the School. Dr. Yukawa Hideki, who received the Nobel Prize for the meson theory, began his research during his term at Osaka University. Dr. Nambu Yoichiro, who was also awarded the Nobel Prize in Physics 2008, has been a Guest Professor at the Department of Physics. This great tradition continues in a wide variety of world-level research, including theoretical physics, particle physics, nuclear physics and condensed matter physics.

The Department of Chemistry's particular strengths are postgenome protein research, research on biological phenomena using a chemical approach, as well as chemical and theoretical studies at the nano level. Researches in this department also focus on molecular design, synthesis, and characterization of novel compounds with specific functional interest.

The Department of Biological Sciences is currently in the midst of a revolution in Biology. Ten years ago, no one imagined that we could unveil the human genome. Yet, in 2001, the draft sequence of the human genome was completed, and we now know the genome sequence of hundreds of living things. Brand-new technologies and approaches, bioinformatics and systems biology, to name but two, are being introduced at a breathtaking

pace. New phylogenic trees have been proposed using currently accumulating data. Students keep up with these developing areas and make new exciting findings with the help of members of the department.

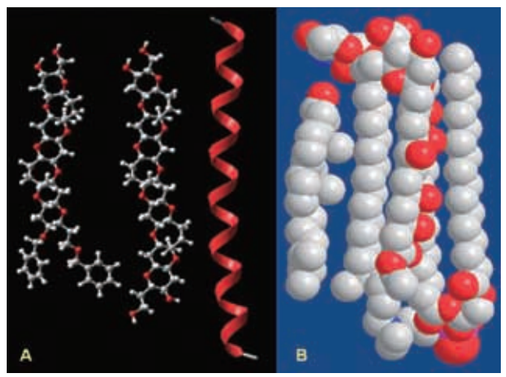
In the Department of Macromolecular Science, basic studies are carried out on macromolecular syntheses and reactions, as well as structures, functions, and properties of both individual macromolecules and their assemblies. These studies are a prerequisite for the development of novel plastics and functional polymers utilized in daily life, and to understand the functions of biopolymers that play important roles in biological systems.

The newest department in the Graduate School is the Department of Earth and Space Science, a unique department established in 1995, whose aim is to develop a new horizon in the research and the education of earth and space science from a physics-based perspective. The department attempts to go beyond the traditional framework of science to develop a new frontier of interdisciplinary science, and construct a new style of earth and space science as an integrated science. Such research will open up new perspectives on the problems of the Earth's environment in the 21st century and the question of the origin of life.

Structures and Functions of Membrane-bound Molecules

Biomolecular interaction occurring in membranes play an important role in biological functions such as intercellular signaling. The structural basis of this specific but flexible molecular recognition, however, remains largely unknown due to a lack of appropriate characterization methodologies. Powerful structural biology techniques such as X-ray crystallography and solution state NMR are often difficult to apply to membrane systems due to their poor crystallinity and highly anisotropic nature.

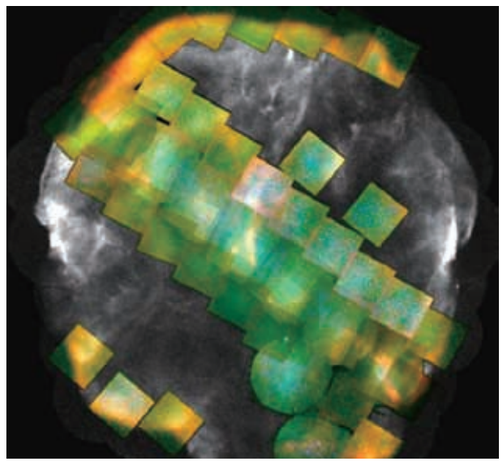
In the Department of Chemistry, fundamental research is being carried out to understand the structural basis of molecular recognitions in and around biomembranes, which potentially leads to elucidation of the structures and functions of intra- / inter-cellular signaling networks. For example, marine phytoplankton produces potent bio-toxins, which have a characteristic ladder-shaped structure and sometimes cause human poisoning. The mechanism of toxicity is accounted for by binding to transmembrane α-helix peptides (see Figure A). Another example is an antifungal drug, which expresses its biological activity by forming a molecular assembly with membrane lipids (see Figure B) and selectively permeabilizing the fungal membranes.



Observation of the Cygnus Loop with X-ray CCDs onboard Suzaku and Newton

Prof. Tsunemi's group at the Department of Earth and Space Science observed the Cygnus Loop with X-ray CCDs on board the Suzaku and Newton satellites. Suzaku is a Japanese satellite launched in 2005 and Newton is an European satellite launched in 1999. Each carries an X-ray CCD with a field of view of about 1/2~1/3 degree. The Cygnus Loop (see the Figure) is a supernova remnant whose age is about 10,000 years old. It has a circular shape with a diameter of about 3 degrees and is bright at X-ray wavelength. The black and white image was taken by the ROSAT satellite using a gas proportional counter. The X-ray CCDs have a much better wavelength resolution that enables plasma parameters (temperature, abundance, ionization state, density etc) to be determined.

Prof. Tsunemi and collaborators found that the Cygnus Loop consists of two components: one is relatively cool, about 0.2~0.3 keV, and the other is hot, about 0.5~0.8 keV. The cool component is the shell and originates from swept-up interstellar matter surrounding the progenitor star. The hot component fills the inside of the shell. Since the hot component originated from the ejecta of the supernova, its abundance shows the products of the nucleosynthesis at the time of the supernova explosion. Prof. Tsunemi and collaborators found an asymmetry of the various atomic elements inside the Loop. (These elements will be the raw material for the next generation of stars). Taking into account the absolute amount of the elements, the mass of the progenitor star can be estimated at about 15 times the solar mass. If this is correct, the supernova explosion should have created a neutron star that should be visible at X-ray wavelength.



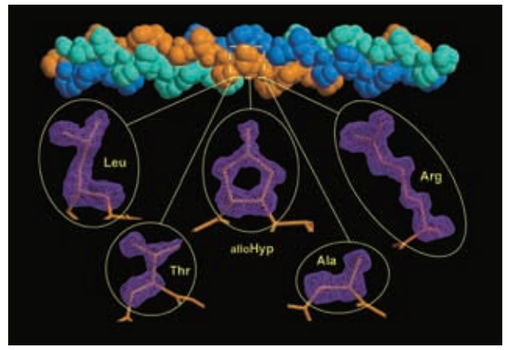
X-ray image of the Cygnus Loop. The black and white image is taken by ROSAT, while colored regions were observed with X-ray CCDs. Square regions where observed by Suzaku and circular regions by Newton. The observations are ongoing.

Active Academic Exchange among Scholars, Researchers, and Students

The School of Science engages in basic scientific studies, and the research environment is very international. The School has concluded academic exchange agreements with universities and laboratories from 16 countries including China, U.S.A., France and Vietnam.

The School also has student exchange programs with these universities. Under agreements or not, the School hosts several dozen students from abroad regularly. Symposiums in English, lecture meetings and workshops are held by visiting scholars and researchers. They are open to students, who have an opportunity to participate in English discussions.

The international exchange activities spread widely from individual scientist's to inter-departmental levels. Some groups are engaged in joint international collaborative research. The School of Science and the Graduate School of Science actively promote further internationalization and welcome many more foreign students to the School.



Medicine

Faculty of Medicine

Medical School
School of Allied Health Sciences

Nursing
- Fundamental Nursing
- Reproductive and Pediatric Nursing
- Adult and Geriatric Nursing
- Community Health Nursing

Medical Physics and Engineering
- Medical Physics
- Medical Engineering

Laboratory Sciences
- Basic Laboratory Sciences
- Clinical Laboratory Sciences

Graduate School of Medicine

Physiological Sciences
- Anatomy
- Physiology
- Neurosciences
- Biochemistry and Molecular Biology

Pathophysiology and Therapeutics
- Pathology
- Pharmacology
- Molecular Therapeutics
- Medical Engineering
- Pharmaceutical Information

Preventive and Environmental Medicine
- Social and Environmental Medicine
- Microbiology and Immunology
- Medical Genetics
- Health and Sport Sciences
- Infection Control and Prevention

Internal Medicine
- Internal Medicine
- Integrated Medicine
- Radiology

Surgical Medicine
- Surgery
- Acute Critical Medicine
- Organ Regulation Medicine
- Neural and Sensory Organ Surgery

Medical Science (Master Course)
Health Sciences
Nursing Science
- Evidence-Based Clinical Nursing
- Children's and Women's Health
- Health Promotion Science

Medical Technology and Science
- Functional Diagnostic Science
- Medical Physics and Engineering
- Biomedical Informatics

The Faculty of Medicine comprises the Medical School and the School of Allied Health Sciences. Whilst the Medical School offers 6-year courses for future doctors, the School of Allied Health Sciences provides 4-year curricula in Nursing, Radiological Technology and Biomedical Engineering as well as Laboratory Sciences for prospective Nurses, Public Health Nurses, Midwives, Radiology Technicians and Laboratory Medical Technologists. The Medical Science Department trains proficient experts in Medical Professional Jobs such as Doctors, Nurses, Radiological Technicians, and Laboratory Medical Technologists who can provide increasingly sophisticated treatment appropriately and accurately as a team.

The Medical School produces highly competent doctors who are able to diagnose and treat patients accurately. Current EBM (Evidence Based Medicine) medical treatments require for medical acts to be based on explicit and judicious scientific evidence.

Therefore, it is essential to train doctors in fundamental knowledge and technology. A large number of active experienced clinicians and worldwide medical researchers allow our Medical School to offer students not only fundamental knowledge but also the opportunity to learn cutting edge knowledge and technology. Furthermore, we are developing a state of the art hospital where our students can practice cutting edge medicine.

The School of Allied Health Sciences is committed to training highly competent Nurses, Radiology Technicians and Laboratory Medical Technologists. In this respect, we value a dedicated research attitude. In the fields of Health Care and Nursing we tackle such issues as anti-smoking measures and nursing for the elderly essential to building a healthy society. Furthermore, care for patients who have life-threatening illnesses and for patients who are terminally ill has also become the object of extensive research. In the fields of Medical Technology and Science, examination methods that are less demanding on the body and effective radiation therapy with shorter exposition are needed.

Promoting "Medical Care Team" has become essential to Medical Practice. That is why the School of Allied Health Sciences devotes itself to training Medical Technologists and Nurses who are able to work side by side with doctors. The ageing of society over the coming decades and our limited medical resources require us to look into how to dispense safe and high quality treatments. Additionally, the School of Allied Health Sciences pioneers "Clinical Training" in Japan giving students an opportunity to train in wards and main hospital departments. Students are offered a chance to partner with patients and learn about how their field of study is involved in patient treatments.

"Clinical Training" also allows students to familiarize themselves with the role played by other experts in Medical Professional Jobs with regards to patients.

The Faculty of Medicine aspires to train a large number of medical specialists who can apply medical treatments, such as "Gene Therapy", "Regenerative Medicine", and "Robotics Therapy".

World-leading pioneering research

Graduate School of Medicine produces numerous world-acclaimed research results, as well as outstanding researchers. In addition to an exceptional number of Grants-in-Aid for Scientific Research being awarded to our students by the Ministry of Education, Culture, Sports, Science and Technology and the number of Contract Research, Joint Research and Donation for Research and Education from private companies accorded to our students being among the highest in Japan, our students are also among those who produce the largest number of published theses in Japan and submit a substantial number of theses to renowned scientific magazines.

Furthermore, several groups of our research fields have received funding support from the "Global COE Program", which was established by the Ministry of Education, Culture, Sports, Science and Technology to promote creating education and research centers that perform at the apex of global excellence to elevate the international competitiveness of the Japanese universities.

Besides these research projects, other mid-term research plans are currently being pursued, thus consolidating the evidence of our involvement in advanced research.

Responding to Globalization

Graduate School of Medicine is particularly proud of its cutting edge research in such fields of study as Immunology, Molecular Cell Biology, Molecular Genetics, Microbiology, and Gene Therapy Science. Therefore, our Medical Graduate Course actively invites foreign researchers, promotes Joint Research and calls for foreign students to come and study at our facilities. Furthermore, in the spirit of academic exchanges and international collaboration, we participate and actively promote international personnel exchanges. We especially like to welcome foreign researchers under Joint Research programs with overseas Universities and Institutions.

Under the university slogan "Live Locally, Grow Globally", Graduate School of Medicine, Osaka University, encourages exchanges between researchers and promotes Joint Research programs striving to sustain our internationally acclaimed reputation.

The international exchange program of Graduate School of Medicine, Osaka University grows every year. The department invites foreign researchers, sends faculty members abroad and promotes various international exchange programs, such as overseas studies for Osaka University graduates and undergraduates. It also welcomes overseas students.

As part of international exchange, the School has established an International Exchange Fund. The Fund supports accommodation expenses of two overseas students and of three students who have stayed on after their term of study expired. In addition, the School promotes Joint Research with one overseas researcher.

Graduate School Medicine, Osaka University strongly believes in the role Japan has to play as a member of the international community and in the importance of education to foster talents for the international community. It is with these aims in mind that we strive to develop areas such as overseas studies, as well as education and research. We also endeavor to give our students a unique opportunity to experience foreign culture and improve their working knowledge of foreign languages.

In addition, we have set up an International Exchange Grant for young researchers, such as graduates willing to study at foreign universities or research institutes. The grant covers travel expenses and accommodation expenses. Additionally, in an effort to nurture physicians with broad international experience, we offer our students an opportunity to follow courses at overseas medical institutions and strongly promote international exchanges.

Graduate School of Medicine, Osaka University has an interdepartmental exchange agreement withoverseas universities. Participating Universities and Institutions are currently establishing Joint Research programs, as well as exchange programs available to researchers and students.

Furthermore, the Academic Exchange Program set up between Osaka University Graduate School of Medicine and a number of foreign Universities and Institutions, allows selected graduate and undergraduate students to receive research guidance and follow courses overseas for up to one year without losing an academic year. Under this agreement, the courses at the foreign University or Institution are free of charge.

Helping Mothers Raise Twins and Triplets Providing Childcare Guidance in Cooperation with Community Health Nurses

As more women are being treated for infertility, there has been an increase in multiple births, which for some parents can multiply the problems associated with child rearing and childcare.

Professor HAYAKAWA Kazuo of the Course of Health Science is pursuing studies on the special issues of childcare involving twins and premature infants.

Professor HAYAKAWA is in charge of the field called Health Promotion Science, which is closely related to work at health centers. The scope of Health Promotion Science is broad, covering child rearing, child abuse counseling, the prevention of food poisoning, the diagnosis of residents for dioxin damage, and homecare of people with incurable diseases.

Professor HAYAKAWA's reason for studying childcare in relation to multiple births, like twins or triplets, is that it brings into sharp focus the problem points of government policy regarding mothers and childcare, which again is closely related to Community Health Nursing. Professor HAYAKAWA, communicating with a group of mothers of twins of triplets called the Mothers of Twins Club, has been conducting practical studies on the problems associated with caring for twins or triplets, wisdom in child rearing, and ideal healthcare policies for the government.

Because breastfeeding and bathing their babies is more troublesome for mothers of twins or triplets, they also feel more stress, which could lead to neglect or abuse. The study also revealed the insufficiency of counseling at health centers for these mothers. Professor HAYAKAWA says, "By leaving my laboratory and working together with mothers and public health nurses, I am able to make a high-quality study, and by publicly presenting the results of that study, I hope to positively influence the direction of government policies concerning mothers and childcare."

Dentistry

School of Dentistry

Dentistry

- Oral Anatomy & Developmental Biology
- Oral Physiology
- Molecular and Cellular Biochemistry
- Pharmacology
- Oral Pathology
- Oral Microbiology and Infectious Diseases
- Dental Materials Science and Technology
- Oral Health and Preventive Dentistry
- Restorative Dentistry, Endodontology and Periodontology
- Prosthetic Dentistry
- Oral and Maxillofacial Surgery
- Orthodontics
- Pediatric Dentistry
- Dental Anesthesiology
- Oral Radiology

Graduate School of Dentistry

Integrated Oral Sciences and Stomatology

- Pathogenesis and Control of Oral Diseases
- Oromaxillofacial Regeneration
- Functional Oral Neuroscience
- Diagnostic Dentistry
- Craniofacial Development Biology

Molecular Oral Biology and Dentistry

- Oral Infections and Diseases Control
- Oral Biology and Disease Control
- Oral Developmental Biology
- Community Dentistry and Informatics

Oral Bioscience as the Entrance to Gain in the QOL

The mouth can be called “the entrance” to a living organism. Eating, speaking and facial expressions performed by the maxillo-facial system, are indispensable not only for life maintenance but also for psychosocial health. On the other hand, the maxillo-facial system is continuously at risk of invasion by toxic substances and bacteria, and consequently the threat of illness is very large.

Sensory-motor disorders of the maxillo-facial system have a great influence on the QOL. In recent years, functional disorders of mastication, swallowing and speaking, are a growing social problem with the increase in elderly people, or with the improvement in the rate of lifesaving of cerebrovascular accident patients and oral cancer patients. Therefore, the social request for research on the function and disorder of the maxillo-facial system is now very large. Furthermore, the trigeminal nervous system controlling the maxillo-facial system has been characterized as distinct from the spinal nervous system, and its scientific significance is very high.

In Japan, Osaka University is the only national university corporation, which has a graduate school of dentistry independent from that of the medical school.

The Graduate School of Dentistry performs highly advanced research on the health and disease of oral functions and structure, in wide-ranging aspects from the molecular to the human behavioral level.

The majority of faculty staff at the Graduate School of Dentistry are researchers and practitioners who have both Doctor of Dental Surgery (DDS) and Doctor of Philosophy (PhD) degrees, encouraging the unification of the two cultures of clinical practice and cutting-edge research significantly contributing oral health care for society.

The School of Dentistry

The school of dentistry was established in 1951 as the first institution among the national universities devoted to both education and research in dentistry. The basic educational program leading to the Doctor of Dental Surgery (D.D.S.) Degree consists of approximately 1.5 years of pre-professional study and 4.5 years of study in the School of Dentistry.

The Osaka University School of Dentistry is not merely a place where future dentists are educated. It also stands at the "Frontier of Oral Science" where comprehensive study and education that transcend the boundary between basic dental science and clinical dental science are carried out.

Revolution of Dental Education

A great revolution in dental education was started in 2006. All dental students in Japan now have to pass the Common Achievement Tests including Computer Based Testing (CBT) and Objective Structured Clinical Examination (OSCE) before an undergraduate clinical course in every school. The CBT is a computer-aided objective examination to evaluate the knowledge and the ability to solve the problems and the OSCE is also an objective examination to evaluate the clinical attitude and skill.

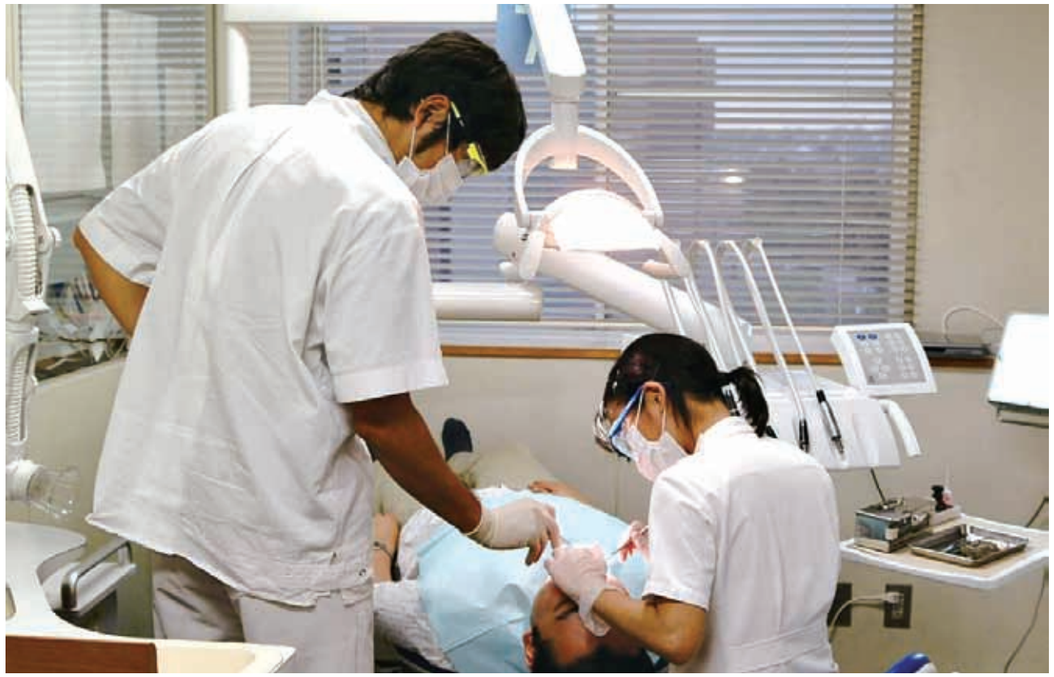
In addition, the Ministry of Health, Labour and Welfare had started to make the one-year junior-resident course a requirement for graduated students after passing the national examination for the dental license.

Osaka University Graduate School of Dentistry Opens the Frontier of Biodentistry

Most people think of dentistry as a kind of art and may hold a mental image of a practitioner skillfully drilling, filling and pulling out teeth. However, such ideas are now out of dated. Molecular biology introduced in the 1980s have brought drastic changes in dental research, with new therapies based on analyses of molecular functions of oral tissues and cells and understanding of biology, physiology, genetics, immunity, and neurology at the molecular levels. We believe future dental research should focus on periodontal diseases, regenerative dentistry and problems involving with eating and speaking.

Osaka University Graduate School of Dentistry has set the longstanding goal of not only training skillful clinical dentists, but also producing leading researchers in the innovative dental health care involving regenerative dentistry. We aim to achieve a "better life, to eat and live better" for humans by developing and promoting the biodentistry associated with the oral cavity, which is essential to sustain better quality of life.

With these objectives in mind, we are pushing forward to create an advanced field of biodentistry, which we call Frontier Biodentistry (FBD), in which traditional dentistry such as dental materials and improvement of technical skills and molecular cellular biology-oriented oral science coordinately function together. Our research has accomplished the highest level in Japan and our school is one of the top five dental research institutes in the world. Taking advantage of our position as a graduate school affiliated to a comprehensive Osaka university, we actively engage in joint research projects with other fields



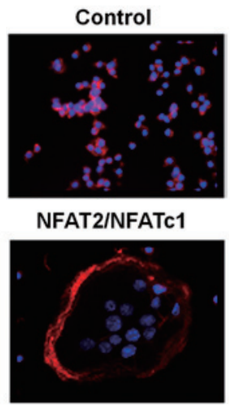
of study pursued at our university, such as medicine, biology, engineering, ethics and literature. Thus, Osaka University Graduate School of Dentistry will be able to provide outstanding environments for students who are interested in biosciences and other research fields such as regenerative dentistry, periodontology and oral care for aged people with an assistance and supervision of biotechnology experts, as well as those trained in the traditional dental clinics.

Investigation of Cancer Bone Biology

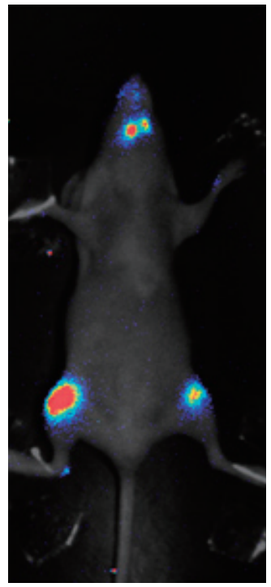
"Bone" functions not only as skeletal and locomotive organs but also "internal organs" that regulate metabolisms of calcium and phosphate by producing hormones such as FGF23. Moreover, bones contain various different types of cells including immune cells, hematopoietic cells, neuronal cells and adipocytes in addition to skeletal cells including osteoclasts, osteoblasts, osteocytes and chondrocytes. Thus, bone forms a very complex but well-organize cellular network system which associates with hematopoiesis and angiogenesis. More importantly, bone metastasis of malignant tumors such as breast and prostate cancers has been greatly clarified in Japan. Since bone is an essential tissue to support teeth, investigation of bone biology is also very important in the dental field. Development of the regeneration of bone tissues in jaws sheds lights on bone destruction by periodontitis and the successful achievement of dental implant.

Our goal in research contributes to development of effective therapy on bone diseases.

To approach this goal, we are investigating bone and cartilage biology at cellular and molecular level by using the latest techniques of molecular biology and genetic approaches. Our aims are to examine (1) the molecular mechanisms regulating metastasis malignant tumors into bone, (2) the mechanisms of osteoblast differentiation and bone formation (3) the mechanisms of osteoclast differentiation and bone resorption and (4) the mechanisms of endochondral ossification. These studies are published in the top-level international scientific journals and received high appraisal at home and abroad.



Identification of osteoclast inducible factor



In Vivo Imaging of Bone Metastasis

Student column

Name
School/Graduate School at Osaka University (Grade)
Home School/University, Home Country

Cheng Ye

Graduate School of Economics (Master's year 1)
Shandong University, China

Six years ago, I came to Japan. Before I came here, I had studied Chinese culture in Shandong University in China. In the process of studying, I got a strong interest in Japanese culture. I would like to read *Genji Monogatari*, one of the well-known old novels, in Japanese. Under the influence of my family, I was interested in business as well, when I was young. I wanted to have my own company like my father. In order to achieve this dream, I chose to study abroad to acquire advanced knowledge about business and management skills. Initially, my family wanted me to study in the United Kingdom or the United States. However, when I found more and more Japanese companies entering into China and being active in the Chinese market, I decided to study in Japan, where cherry blossoms are in full bloom in early April.

Because of the excellent faculty and the well-structured education for overseas students, I chose to earn my master's degree at the Graduate School of Economics, Osaka University. This April, I succeeded in passing the entrance examination. I now study at the Global Management Course in the Major of Management and Business. In order to realize my entrepreneurial dream, I chose "venture business" as my research topic. In addition to reading a lot of English and Japanese literature, I need to do a lot of presentations. In class, interactive discussions and active Q's and A's are required.

Osaka University has an international house for overseas students. It is very low in rent and very convenient. There are good support systems for overseas students, as well as a variety of scholarships available in Osaka University. Soon after admission, I received the tuition waiver and a scholarship from the Enterprise Foundation. Because I have almost no economic burden, and I do not need to work part time. I can focus on my studies, especially my research topic. Besides, I still have some time to participate in school activities and make many friends. They have developed my vision and enriched my experiences. There are also special courses for overseas students and various international exchange programs.

After graduation, I intend to work in Japan for a couple of years to learn advanced management skills and excellent services. Then, I will begin to start my own business. I am sure that my study at Osaka University will open the door to my dream.

Xie Ping

Graduate School of Medicine (Doctor's year 3)
The First Affiliated Hospital of NanJing Medical University, China

After graduation from NanJing Medical University in China in 1997, I worked as a oculist and got the Master's Degree in 2004. This experience had given me a well understanding of how basic research could be utilized towards the benefits of the patients. I decided to learn more in my major, and also hoped to study in a world famous university.

Many doctors in my hospital studied in Japan in the past 30 years. They brought back sophisticated technology and advanced knowledge, and made great contributions to the development of the hospital. Following their example, I selected Japan as the first country for my studying. The well-preserved traditional culture and the developed social system of Japan also strongly attracted me. Fortunately, I achieved the Monbukagakusho Scholarship from Chinese Government by the recommendation of my hospital.

I think that Osaka University is the ideal place to me. First, Osaka University is international acknowledged for its outstanding achievements in various scientific research fields. Secondly, the graduate school of medicine is one of the most prominent research institutes in Japan and contributed a lot to the research on control of complicated diseases in the world. Thirdly, the Department of Ophthalmology is a world famous ophthalmology center with an excellent clinic and scientific research team and many wonderful projects.

Now my research is mainly focus on the oxidative stress and chronic inflammation on pathological process of Age-Related Macular Degeneration (AMD). Similar to Japan, AMD has become one of the leading causes of vision loss in the aging population in China. I hope to use the knowledge studied here to alleviate the suffering of more people in future. I feel so lucky that I can study at an excellent atmosphere here. All the members in the Department are willing to help me. They encouraged me to devote myself to research.

I love Osaka, and all the people I met here are very kind and warmhearted. Now I enjoy the beautiful scenery, delicious foods, and convenient life in this city. I am sure you will like it if you come.

Ece Uyukur

Graduate School of Science (Master's year 2)
Istanbul Technical University, Istanbul, Turkey

Although it was really different from my previous work, I wanted to study high temperature superconductivity. Since Japan is one of the best countries for this topic, with the recommendation of my previous supervisors I decided to come to here.

I came here as a privately funded research student at first and I attended Japanese classes for six months. After almost 1 year I got into the Osaka University Faculty of Science Scholarship for International students. Now I have completed my second year in Physics department/Tajima Laboratory and I am continuing to my study as a 2nd year Master's student in a great research environment.

Currently, my research project is about the charge dynamics of the high temperature cuprate superconductors probed by optical spectra. I am working on infrared spectroscopy of the samples that grown in our laboratory.

Coming to Japan was a big decision for me. Fortunately my family were always supportive and encouraged me about this decision. After I came here, I experienced lots of difficulties almost about everything because I didn't know Japanese at all. But my superiors and my friends always help me to overcome those difficulties. I also meet lots of great people from all around the world in Osaka University.

Starting a new life in a completely different environment has its own difficulties all the time, of course. However, the biggest problem that you can face in the Faculty of Science can be the communication problems with other students due to language barriers. Therefore, I highly recommend learning Japanese to people who want to study in here. On the other hand, despite the all difficulties, this experience makes it totally worth it.

Yu Guannan

Graduate School of Dentistry (Doctor's year 1)
China Medical University, China

I graduated from China Medical University in 2008, with a major in Stomatology. Throughout my five years of studies, I came to realize that I was not content with just the knowledge from books or clinical techniques. In my view, Medicine is an area of study, which is comprehensive, complex and mysterious. Its development is never constrained to itself. It has a more profound and secular meaning. Basing on such a comprehension and enthusiasm, it strongly motivated me to venture in this field of fascination to pursue a broader education to enrich my knowledge.

As is known to all, Osaka University is one of the most reputable and prestigious universities not only in Japan but also worldwide. In particular, the Graduate School of Dentistry is well known for its accomplished dental department in Japan. Yearning for such a fulfillment in extending my knowledge, I managed to get an excellent opportunity to continue my studies at the Department of Fixed Prosthodontics in Osaka University and it is a great honor to be under the supervision of Professor Hirofumi Yatani. At present, I am in the branch of oral molecular biology, and learning one of the frontier researches of human pluripotent stem cell with a young eminent tutor. I am very interested in the current project and would like to devote myself into this research area in hope of obtaining excellent achievements in the field of Stomatology and contributing back to society.

To be part of Osaka University is a valuable asset in my life. The depth of knowledge, multiple academic disciplines, and sense of purpose it provides will serve me well in the future. Those who are earnestly in pursuit of an intellectual path that truly interest them will definitely come away with a meaningful and lasting education here.

Pharmaceutical Sciences

School of Pharmaceutical Sciences

Pharmacy
- Clinical and Biological Pharmacy

Pharmaceutical Sciences
- Chemical Pharmaceutical Sciences
- Biopharmaceutical and Environmental Sciences

Graduate School of Pharmaceutical Sciences

Molecular Pharmaceutical Sciences
- Medicinal and Molecular Chemistry
- Molecular Science

Applied Biopharmaceutical Sciences
- Biofunctional Molecular Sciences
- Regulation of Structural Biofunction
- Medical Sciences

Environmental Pharmaceutical Sciences
- Bioinfomatics
- Environmental Bioscience

Advanced Pharmaco-Science (Master Course)

Pharmaceutical Sciences aim at Health and Welfare of Human Beings through Drugs Challenge to Post-Genome Science in the 21st Century

Drugs and human being have long been mutually interrelated.

We have experienced, chosen and used natural drugs derived from animals, plants and mineral for several thousands of years. The 20th century was the era when fine chemistry developed remarkably on the basis of organic chemistry and physicochemistry, which resulted in the dramatic improvement of technology to produce novel drugs successfully.

In addition to such chemical pharmaceutical sciences, biopharmaceutical sciences are necessary to understand pathological condition and medicinal effects on the molecular level, which help us explain how drugs and their targets interact in the body.

Furthermore, development of biotechnology makes it easy to prepare large amounts of physiologically active substances whose concentration in vivo might be extremely low.

However, there are still many diseases that are difficult to cure with drugs: these intractable diseases include not only cancer and AIDS, but also hypertension, heart disease and diabetes, in addition to senile dementia. People long for specific medicines prescribed towards these inveterate diseases. Since the entire human genome has been deciphered, we will hopefully be able to unveil the function of each gene and molecular basis of pathophysiology.

Such rapid evolution of genome science further assists the revolutionary advancement of drug development. Novel research fields, such as computer-based molecular design, genome informatics, and drug delivery systems will also accelerate it.

Moreover, pharmaceutical sciences are expected to solve various environmental problems, since chemicals in our environment and ecology are closely related to human health. Thus, the pharmaceutical sciences will be a very attractive study area for coming generations willing to contribute to the health and welfare of human beings. Finally, it should be noted that we started two new Departments in our Faculty in 2006: one, the “Department of Pharmacy” where future researchers in the field of medical pharmacy and pharmacists are educated, and the other, “Department of Pharmaceutical Sciences” that trains specialists who can take active roles in various areas with their knowledge of drugs.

Protein Structural Study Facilitates Drug Discovery and Safer Usage

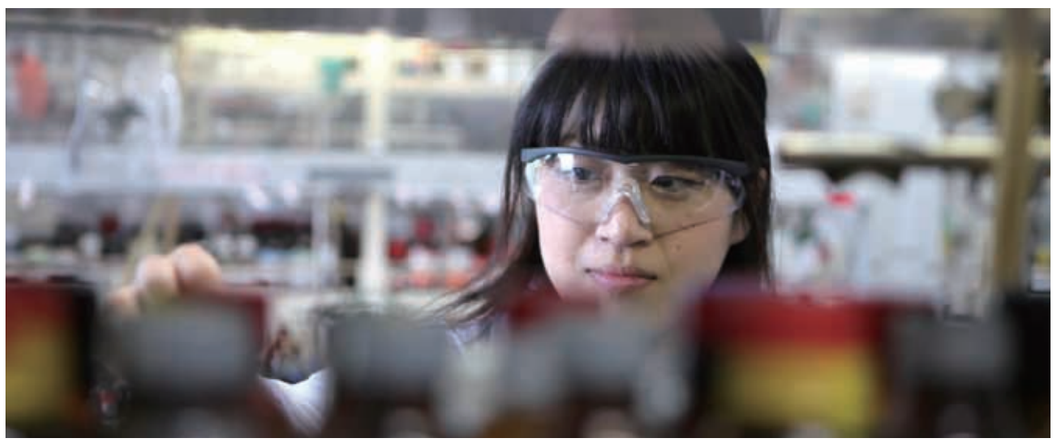
Oxygen is a molecule that is indispensable to the life of human beings, and biological reactions of oxygen are mainly regulated by heme proteins. Heme protein is a generic name for proteins which contain heme prosthetic groups, and play a key role not only in energy transduction, but also in oxidative metabolism of various drugs and chemical compounds as well as in signal transduction in response to environmental changes.

The group led by Dr. Tadayuki UNO, Professor of the Laboratory of Analytical Chemistry, has been studying structure-function relationships of heme proteins which are responsible for oxygen metabolism in our bodies. This group reveals biological events which are related to oxygen, and contributes greatly to the field of drug discovery and clinical usage of drugs. For example, neuroglobin is induced in our brain under hypoxia and protects neurons by scavenging reactive oxygen species, and nitrophorin releases nitrogen oxide (NO) and expands blood vessels. Understanding of the gas storage/release mechanisms of these heme proteins will lead to the discovery of neuro-protective and cardiovascular drugs, respectively.

On the other hand, cytochrome P450s (CYPs) are expressed mainly in our liver and are key proteins in drug metabolism. Understanding of the drug metabolizing mechanism of CYPs will enable safer drug usage for patients with low side effects. The group succeeded in cloning and over-expressing all human major CYPs, and is analyzing their molecular structure using X-ray crystallography along with various spectroscopic methods such as UV-vis absorption and resonance Raman effect. The drug binding and metabolizing activities of CYPs are also measured with HPLC and MS technique, revealing structure-function relationships of clinically important human CYPs. This group has been accepting many foreign researchers and students worldwide, affording an international research environment.

A challenge to "Environmental Pharmacology"

Generally, a drug shows pharmacological effects via interaction with cellular components. Specific interaction between the drug and target molecule(s) is important for beneficial pharmacological effects without any adverse effects. Most drugs are made to interact specifically with their target molecule such as enzymes, receptors, ion channels and transporters. Then, functional analysis of the known target molecules and search for new target molecules are important for drug development. Prof. Matsuda's laboratory examines the roles of target molecules of drugs in the central nervous system. In collaboration with pharmaceutical companies and other laboratories, this laboratory developed the selective serotonin$_{1A}$ receptor agonist osemozotan (MKC-242) and the selective Na^{+}/Ca^{2+} exchanger inhibitor SEA0400, and examined the effects of these and other novel drugs on neuronal network and brain function. In these studies, many techniques of cell biology, neurochemistry and behavioral pharmacology have been used. In addition, the research in this laboratory has recently been focused on "environmental pharmacology". Besides genetic factors, the contribution of environmental conditions experienced early in life to the onset and course of psychiatric disorders are increasingly recognized. Especially, experiences during a critical period of brain development are considered to alter maturation of the brain, and then influence behavior for a lifetime, which could be attributable to the etiology of psychiatric disorders. That is, gene-environment interactions may play a key role in the pathogenesis of CNS disorders. This laboratory has studied the underlying molecular mechanisms of the gene-environment interactions in animal models to develop new strategies for treatment or prevention of psychiatric disorders.



Individual Guidance to Meet the Needs of Students from Abroad

Studying with Students from a Broader Range of Nations

Every year there are about 30 students from about ten nations, mainly in Asia, studying at the School of Pharmaceutical Sciences. Over 90 percent of these students are in the Graduate School, pursuing research in the their respective fields. Individually supported by Japanese students as tutors, they engage in the research activities as a member of the laboratory.

The supervisors of each student emphasize individual support to meet each student's objectives and wishes. At the same time, there is a need to provide a common education in an efficient manner, and the School of Pharmaceutical Sciences International Students Committee was formed to handle education programs for the students from abroad.

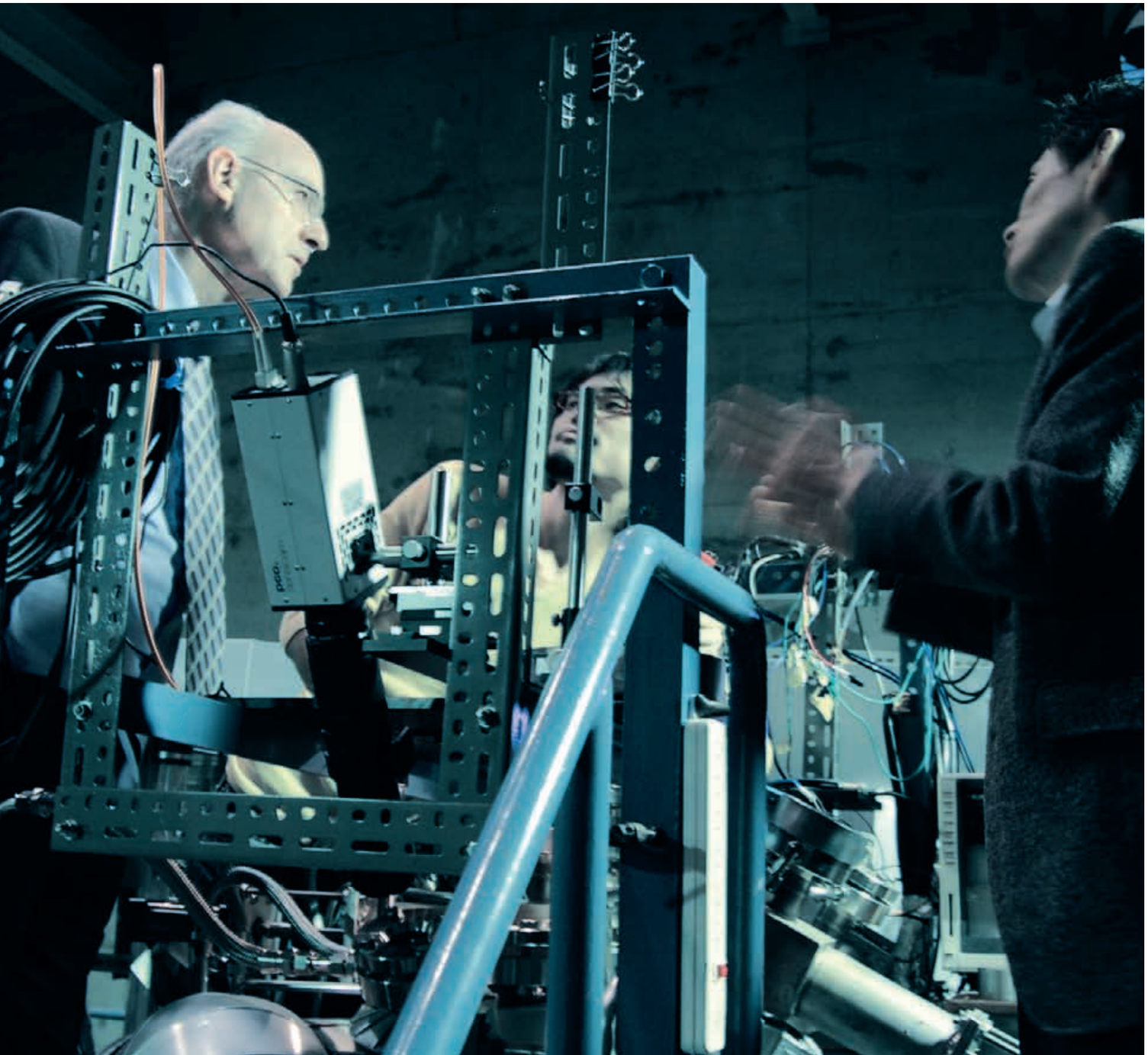
Supervisors provide advice in Japanese on the research conducted by students starting at the preparation stage of a thesis. The students present the results of their research in Japanese, and this is followed by a discussion by instructors and students. In this way, they learn how to write their theses and discuss, all in Japanese.

There are also research seminars and discussion held in English by instructors of researchers. The aim is to allow those students, whose ability to use Japanese is limited, to acquire advanced knowledge about pharmacology efficiently through education in English, the international language.

The School of Pharmaceutical Sciences hopes to further expand the circle of international exchange by attracting students from not only Asia, but a broader range of nations.

At present the School has signed exchange agreements, on the faculty level, with the Faculty of Science of Mahidol University, Thailand and College of Pharmacy of the University of Arizona, in the U.S.A., with which there is an active exchange of students and researchers, and seminars and symposiums held in each location.

Engineering



School of Engineering

Applied Science
- Applied Chemistry
- Biotechnology
- Precision Science and Technology
- Applied Physics

Mechanical, Materials and Manufacturing Science
- Mechanical Engineering
- Materials and Manufacturing Science

Electronic and Information Engineering
- Electrical and Electronic Engineering
- Information and Communication Systems Engineering

Sustainable Energy and Environmental Engineering
- Sustainable Energy and Environmental Engineering

Global Architecture
- Naval Architecture and Ocean Engineering
- Civil Engineering
- Architectural Engineering

Graduate School of Engineering

Advanced Science and Biotechnology
- Material and Life Science
- Biotechnology

Applied Chemistry
- Molecular Chemistry
- Materials Chemistry

Precision Science & Technology and Applied Physics
- Precision Science & Technology
- Applied Physics

Adaptive Machine Systems
- Pioneering Integrated Engineering

Mechanical Engineering
- Complex Mechanics
- Micro-mechanical Science
- Intelligent Machines
- Design and Integration

Materials and Manufacturing Science
- Materials Physics
- Physical Chemistry of Materials
- Properties of Structural and Functional Materials
- Intelligent Materials Processing
- Processing for Manufacturing
- Manufacturing Design and Mechanics
- System Integration

Electrical, Electronic and Information Engineering
- Systems, Control and Power Engineering
- Advanced Electromagnetic Energy Engineering
- Information and Communications Technology
- Quantum Electronic Device Engineering

Sustainable Energy and Environmental Engineering
- Environmental System
- Sustainable Environmental Design
- Environmental Resources and Materials
- Sustainable Energy System
- Quantum and Energy Engineering

Global Architecture
- Naval Architecture
- Ocean System Engineering
- Social Infrastructure Engineering
- Social System Engineering
- Architectural Structure
- Architectural and Urban Design

Management of Industry and Technology
- Technology Design
- Management of Technology Knowledge

Division of Advanced Science and Biotechnology

The division consists of the Department of Biotechnology and the Department of Material and Life Science. As the fruit of our effort to merge the departments, we have succeeded in establishing the ***Global Education and Research Center for Bio-Environmental Chemistry*** at Osaka University in 2007. For almost a century the Department of Biotechnology has played a pioneering role in establishing biotechnology as a new discipline in science. It accepts many international students every year, who, after going back to their own countries, take on leadership roles in biotechnological research activities at universities and other public research institutions and play important roles in supporting industry in their countries. The Department of Material and Life Science, based on the International Course in Biotechnology, aims at exposing young scientists to state-of-the-art research skills and in-depth knowledge of advanced biology, chemistry and physics to harness the potential of biotechnology. The program encompasses both Master and Doctor Courses, while emphasizing research that directly benefits society and the environment. Students are expected to be enrolled in these courses sequentially in order to obtain both Master and Doctor degrees.

Division of Applied Chemistry

Three-dimensional multilayer architectures from layers of cells and nanometer-sized extracellular matrix films have been developed by Prof. Mitsuru Akashi. Preparation of the nanofilms made of fibronectin and gelatin onto cell surfaces enabled fabrication of artificial-layered tissues consisting of xenogeneic human cells.

Prof. Toshikazu Hirao synthesized Sumanene (a partial fullerene), which triggered a phenomenal interest in bowl-shaped π-conjugated systems.

These are examples of the cutting edge research in the department, being awarded COE (2004-) , a global COE (2007-), and the Handai Frontier Research Center. Intensive and unique research schemes and eminent educational

programs throughout the department have provided research fellowship to domestic and international students.

Division of Precision Science & Technology and Applied Physics

Prof. Satoshi Kawata of the Applied Physics Department has been developing a micro/nano machine for working inside the human body or in industrial machines. He invented a new technology called two-photon photo-polymerization to build up three-dimensional micro/nano structures. Recently, his new micro-machine appeared in the scientific magazine *Nature*, and was awarded in 2004 the Guinness World Record as the smallest laser sculpture. As an example he has shown a machine modeled after a real bull but in micrometer scale. Since this micro-bull is as small as a red blood cell, Professor Kawata dreams that in the future it will walk through the blood vessels in humans to the diseased parts such as cardiac and brain infarction in micro blood vessel to leave a drug or even to perform a nano-operation.

Osaka University's Applied Physics Department is now opening an exciting new nano-world.

Photopolymerizable resin allows the creation of the world's smallest bull

Department of Adaptive Machine Systems

Prof. Minoru Asada leads an advanced robotics group of the department with Assoc. Prof. Tomomichi Sugihara who is pursuing the understanding of human intelligence through the bidirectional study of human motion and humanoid robots, and Assoc. Prof. Yukie Nagai who is specially appointed by Global COE program on cognitive neuroscience robotics. Prof. Asada is also the leader of his project entitled "Synergistic Intelligence" that aims at establishing a new design theory of symbiotic humanoids co-existing with us through the mutual feedback from understanding emergence of human intelligence. The robots called CB2, Neony, Synchy, and Kindy are research platforms for this project, and Affetto and mighty are platforms for interaction study and dynamics intelligence, respectively.

Division of Mechanical Engineering

The Division of Mechanical Engineering provides technologies with which our lives can be made safer and easier. It covers scales from nanoscopic to global. Mechanical engineering contributes to such technologies as robotics, micro-machinery, low-emission vehicle and aerospace engineering. It also contributes to solving the problems relevant to safety and security issues. The problems include global and human-related issues such as global environment, energy, medical-care and welfare.

Mechanical engineering is based on the following foundations for its research and education: (1) physics, including solid mechanics, fluid dynamics and thermodynamics (2) theories of control and information (3) advanced methodologies in design, manufacturing and system integration. Osaka University's Division of Mechanical Engineering consists of four areas and several cooperative areas.

Division of Materials and Manufacturing Science

The Division of Materials and Manufacturing Science provides distinguished education and research opportunity to study the rapidly developing front of materials science. Properties of advanced materials are studied from electronic, atomistic, microstructural, and morphological standpoints in order to design and create new materials using various outstanding equipments, such as ultra–high voltage electron microscope (3MeV, the world's highest).

The division has been *adopted as one of the most excellent centers for research and education in Japan, on the Global COE (Center of Excellence for Advanced Structural and Functional Materials Design) program launched by the Ministry of Education, Culture, Sports, Science and Technology (MEXT).*
[HP] www.mms.eng.osaka-u.ac.jp/

Division of Electrical, Electronic and Information Engineering

The Division of Electrical, Electronic and Information Engineering is composed of three departments: the Department of Electrical and Electronic Systems, the Department of Information and Communications Technology, and the Department of Quantum Electronic Device Engineering. The division is conducting advanced and creative researches and educations in the areas of electronics for information technologies, ubiquitous network, nano-technology, systems and control engineering, power and energy engineering, and life science, and is leading the world in these areas. The aim of the division is to bring up talented researchers and technical experts, who can perform international activities and can contribute towards welfare and human-friendly societies in the future.

One of the recent hot topics is the success in 2nd Student Conference on Innovative Electronic Topics (SCIENT2010) supported by the global COE program "Center for Electronic Devices Innovation" promoted mainly in the division since 2007. The conference was organized by doctor course students, and provided a good opportunity for scientists and engineers working in various fields of electronic devices.

Division of Sustainable Energy and Environmental Engineering

Fast track for making energy like the sun is pursued through global collaborations. One is the International Thermonuclear Experimental Reactor or ITER, under construction in Provence France, and the other is the International Fusion Materials Irradiation Facility or IFMIF, promoted under the joint implementation treaty of EU and Japan.

Our group has good knowledge of those key technologies of energy and environment. One is liquid metal magneto– hydro- dynamics. It is also a key for the Fast Breeder Reactor. We serve experimental data or design basis for many projects. Many scientists often visit us for discussion or for participation in our researches, and we go out with a plenty of new data for presentations and discussions. Our graduate students play active parts in the energy related industries. Our eventual goal is inexhaustible energy resources without carbon.
<HP> www.see.eng.osaka-u.ac.jp/senko/english/index.html

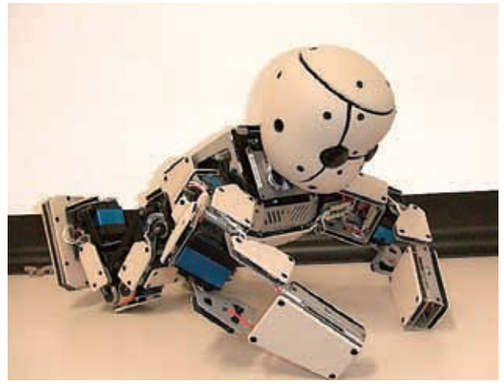
Division of Global Architecture

Division of Global Architecture is combined with departments of naval architecture and ocean engineering, civil engineering and architectural engineering. Each member of the division is contributing to the direction from increasing daily comfortability and safety in local life to international collaboration and cooperation in the field work or in the UN and inter-governmental organizations. We are proud of each unique activity of members and welcome any students and researchers sharing our pleasure to make our planet as "only one"!

Department of Management of Industry and Technology

The Department of Management of Industry and Technology (MIT) was founded in the Graduate School of Engineering in 2004. MIT aims to cultivate next-generation leaders and/or managers who can cover processes through engineering to business and enhance the company's global competitiveness.

MIT provides a dual degree program in which students may earn two Master's degrees, master of engineering (ME) and master of business administration (MBA) in three years. They obtain first ME for two years and qualified students can earn MBA in another one-year program in collaboration with the graduate school of economics of




JST, ERATO, Asada Synergistic Intelligence Project

Engineering Science

photo: NAMBU Tatsuo
An android "Geminoid F" (Left) and a human actress (Right) on stage in a play called "Sayonara" (Good-bye)

School of Engineering Science

Electronics and Materials Physics
- Electronics
- Materials Physics

Chemical Science and Engineering
- Chemistry
- Chemical Engineering

Systems Science
- Mechanical Science
- Systems Science and Applied Informatics
- Biophysical Engineering

Information and Computer Sciences
- Computer Science
- Software Science
- Mathematical Science

Graduate School of Engineering Science

Materials Engineering Science
- Electron Correlation Physics
- Quantum Physics of Nanoscale Materials
- Synthetic Chemistry
- Molecular Organization Chemistry
- Chemical Reaction Engineering
- Environment and Energy System
- Bioprocess Engineering
- Frontier Materials
- Dynamics of Nanoscale Materials

Mechanical Science and Bioengineering
- Mechanics of Fluids and Thermo-fluids
- Mechanics of Solid Materials
- Propulsion Engineering
- Mechano-informatics
- Biomechanical Engineering
- Biophysical Engineering
- Biomedical and Biophysical Measurements

Systems Innovation
- Solid State Electronics
- Advanced Quantum Devices and Electronics
- Optical Electronics
- System Theory
- Intelligent Systems
- Mathematical Modelling
- Statistical Science
- Mathematical and Statistical Finance
- Theoretical Systems Science

What is the Graduate School of Engineering Science?
Where is the Graduate School of Engineering Science going?

Since its foundation, our faculty has continuously created interdisciplinary research fields congruent with social needs, and has made a great contribution to the academy and industry through research and education.

In April 2003, the Graduate School of Engineering Science started its new history. The old departments were reorganized into three new departments (Materials Engineering Science, Mechanical Science and Bioengineering, Systems Innovation) in order to create new research fields in the multi-and inter-disciplinary areas. The new feature of each department is “fusion of physics and chemistry”, “fusion of bioengineering and mechanics”, and “fusion of humanity and engineering”, respectively. The aim of the newly born Graduate School of Engineering Science is to build a strong faculty-driven foundation in multidisciplinary research and education.

In the School of Engineering Science which has 10 courses a characteristic curriculum has been organized to provide a deep knowledge of basic subjects (mathematics, physics, chemistry, biology, informatics) and also to develop wider viewpoints and flexibility.

The fundamental developments of technology not only yield remarkable progress in science, but also give us material prosperity. On the other hand, the fruits of science, such as new discoveries, not only stimulate the birth of new-era technologies, but also constitute culture together with music, paintings, etc., giving us spiritual richness.

“The faculty, through devotion to the fundamental developments of technology through a fusion of science and engineering, contributes to the creation of the true culture of mankind”. This phrase is the idea of our faculty founded in 1961 and it is the immortal guiding principle of our faculty. We are continuously striving to realize this idea from a new point of view congruent with the present age.

Bioreaction Engineering Researches for Contributing to QOL

The advancement of biotechnology is based in developing a wide variety of reactions and functions of organisms, and it holds clues for sustaining our lives and activities as well as solving world-wide posers. Professor Taya's group (belonging to Division of Chemical Engineering, Department of Materials Engineering Science) is aiming at the contribution to QOL (quality of life), through the intensive researches concerning "health", "foodstuff" and "environment", grounding on the knowledge of Bioscience and Bioengineering. The selected ongoing research topics are (1) manufacturing of cultured human cells/tissues toward clinical application, (2) designing of organisms with stress-responsive genes for bio-control, and (3) construction of photo-catalytic deactivation system. These researches are actively performed by approximately 30 members, including oversea students from Malaysia, Vietnam, Indonesia, USA and more.

Molecular Electronics

Recently, organic materials are attracted much attention in the filed of electronics because noble devices such as light emitting diodes, solar cells, and transistors can be fabricated. In Professor Tada's laboratory in the Division of Materials Physics and Quantum Physics of Nanoscale Materials, the charge and spin transport mechanisms in organic materials ranging from thin-films to single molecules are studied and new functions of organic electronic devices are developed. The research subject contains organic thin-film transistors, organic light emitting devices, spin-transport in organic materials, and charge transport through single molecules.

Single molecular electronics, in which a single molecule is used to fabricate a functional electronic device, is a promising concept to break the limits of the current silicon-based electronics. We use a scanning tunneling microscope and other original instruments to measure the electrical conductance of a series of oligothiophene derivatives that are developed by collaborators and the mechanism of carrier transport through the molecule is studied. These studies give a clue how to control electrical conductance in single molecules by chemical design of molecules.

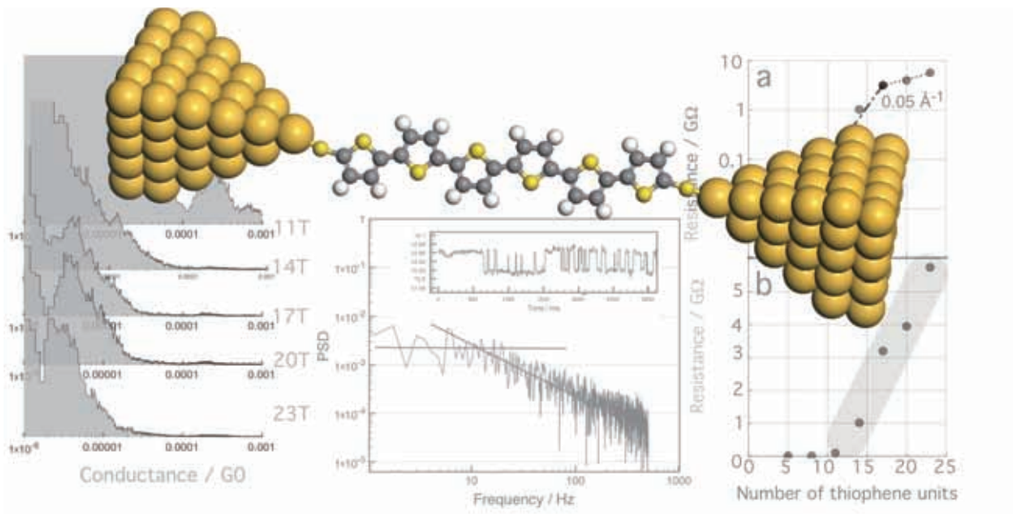
Robot as a Dependable, Friendly, Powerful, and Intelligent Machine

Prof. Arai has been leading his Robotics group since 1997. They focus their research and education on robotics and its practical applications to achieve the promising society, where robots would be able to support humans in every aspect of activities. Their design concept of new robot is modeling useful mechanisms and functions observed in humans, animals, and any other life forms. Theories and applications are studied and educated in the aspect of contribution to our society where we are confronting various problems with complexities. Sensing, human interface, and motion controls required in new robot systems are key topics, based on which they challenge to tackle the new frontiers, e.g. nano-micro bio robotics including automated cloning, monitoring and support robots ensuring safety and security.

A new robot named "ASTERISK" has been developed, which is one of the Limb Mechanism Robot whose design comes from the concept of insect limbs. It has 4DOF limb arranged in 6 radial directions from its body center and is capable of omni-directional manipulation and locomotion. The Asterisk is to be applied for rescue, monitoring, inspection, and maintenance tasks, some of them are well demonstrated at the laboratory experiments.

In Arai laboratory they have been challenging to apply the humanoid to support users. The humanoid, an exact humanlike robot having dexterous two-arm manipulation and terrain-adaptable two-leg walk, is expected for its use in our daily lives. For example, they are tackling to apply the humanoid to some practical tasks, e.g. HRP-2 to support a wheelchair user, where the humanoid pushes a wheelchair and takes some daily appliances for a user. Micro manipulation is one of the promising techniques for bioscience and biotechnology. Prof. Arai has been working on this topic for almost 20 years since he designed the first prototype finger module in 1992. The most unique idea is the two- finger mechanism designed by modeling the human usage of chopsticks.

This idea enables the two-finger micro hand to have simple coordinated motion control as well as the largest workspace volume. In Arai laboratory they have been developing an elaborated micro manipulation system including micro hand, image sensing algorithms enabling auto calibration, auto tracking, auto handling, and fine force sensors. They are also challenging to automate cloning task by using micro robotics and fluidics technologies.



Multidisciplinary Research Laboratory System for Future Developments (∑MRL)

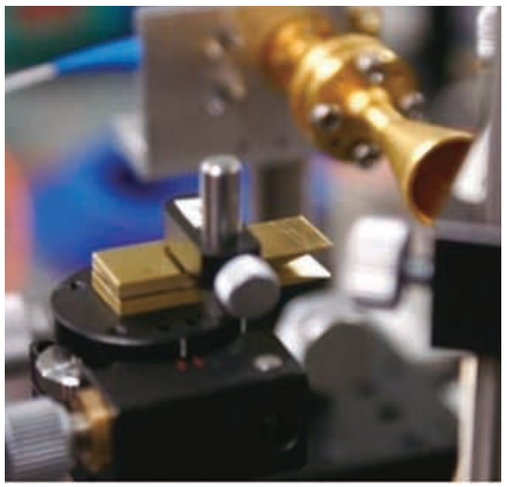
With its precious experience on developing newly emerging interdisciplinary fields, the Graduate School of Engineering Science established in 2002 a unique system called Multidisciplinary Research Laboratory System for Future Developments (MIRAI LAB) which supports and incubates various kinds of research projects which are aimed at the future innovation of creative research fields together with the growth of young researchers and engineers with global standard in these fields in cooperation with the conventional basic engineering science. Selected research subjects in 2010 are:

- ✓COE initiatives for design bionics
- ✓Multidisciplinary studies on fluid science and their international expansion
- ✓Promotion of collaboration with Kobe Research Laboratories of National Institute of Information and Communications Technology
- ✓Membranomics: Engineering science of biomembrane
- ✓Highly sensitive terahertz detector by fusion of plasmonics and nanoelectronics
- ✓High sensitive coherent detection system for continues terahertz wave
- ✓Construction of in vitro simulator of human disease foci
- ✓Exploring carbon-carbon bond formation by cross-dehydrogenative coupling reaction
- ✓Study of luminescence mechanism of SiC nanostructures
- ✓Study of dynamics in cellular functional structures induced by environmental mutagens
- ✓Development of new quantum transport phenomena of Dirac electrons in solids
- ✓Studies of quantum transport through single molecular junctions

Academic Exchange Agreements Concluded With 24 Institutes Worldwide

Interdisciplinary Course in English for International Students

The Graduate School of Engineering Science invites young researchers from overseas universities as post doctorate researchers (part-time), assistants and assistant professors. The Graduate School offers English Course for international students. Lectures and colloquiums (presentations and Q&As in English) with different departmental topics are held to promote the acquisition of a cosmopolitan outlook and to improve communication ability. As part of international scientific research, conducted by the Ministry of Education, Culture, Sports, Science and Technology, the Graduate School holds lecture meetings inviting world-class scholars from international joint research projects. These international exchanges have grown to the point where Academic Exchange Agreements have been entered into with 20 universities overseas representing Germany, China, and the U.S.A., among other nations. Consequently, the number of professors (laboratories) involved in international joint research and students on short-term tuition-free exchange programs studying abroad is increasing. The international students currently enrolled in the Graduate School of Engineering Science represent 14 nations from around the world. Advisement Office for International Students of the School of Engineering Science offers consulting and support services to the students on their daily lives and studies, and holds a variety of events every year. At Osaka University's Icho Festival, a spring festival welcoming freshman and their parents, meetings with international students and a party that incorporates many foods and international flavors are held to promote friendship with people on and off campus. In May, an event called the International Table is held so that students can get a taste of the different cultures of the world. In November, interdisciplinary scientific meeting is organized by students supported by the School and a bus tour is arranged so that students can get in touch with Japanese culture, nature and industry, and in December, faculty members, international students and visiting research scholars hold a big party inviting community volunteers. It is our hope that students studying here will grow up to be leaders who are accepted worldwide through their interaction with talented international students, scholars and researchers.



Language and Culture

The first Graduate School of Language and Culture in Japan Expanded and Reorganized in 2007

The Graduate School of Language and Culture was established in Osaka University in 1989 as the first graduate school in Japan that specializes in this field. It was expanded and reorganized in 2005 and in 2007 to better adapt itself to social changes in Japan and the world at large. At present, the Division of Language and Culture is comprised of seven courses: Comparative Studies in Language and Culture, Systems in Language and Culture, Interdisciplinary Cultural Studies, Language and Communication, Education in Language and Culture, Language and Information Sciences, and Language and Cognitive Sciences. The Division of Language and Society is a new division of the School which has its origin in the Graduate School of Integrated Studies in Language and Society, established in Osaka University of Foreign Studies in 1997. It is comprised of three courses: Applied Studies of Language and Society, Area Studies of Language and Society, and Japanese Language and Culture.

The common objective of these courses is to explore numerous facets of language and culture, and to create human resources who are competent enough to cope with the complex linguistic and cultural settings of the globalizing world. To achieve these aims, the School encourages transnational and interdisciplinary researches, and, in this spirit, welcomes international students as well as those who have been trained in social and natural sciences.

The Graduate School of Language and Culture strives to establish new frameworks and methodologies for education and research in language and culture in the hope that its students may in the future become international leaders in this field.

Graduate School of Language and Culture

Language and Culture
- Comparative Studies in Language and Culture
- Systems in Language and Culture
- Interdisciplinary Cultural Studies
- Language and Communication
- Education in Language and Culture
- Language and Information Sciences
- Language and Cognitive Sciences

Language and Society
- Applied Studies of Language and Society
- Area Studies of Language and Society
- Japanese Language and Culture

Admission of International Students

The Graduate School of Language and Culture opens its door widely to international students so that it will produce high-level professionals and researchers who can meet the demands of the world of the 21st century, which will no doubt be characterized by intensifying globalization on one hand, and multi-linguistic and multi-ethnic social environment on the other. International students at the School numbered 157 in 2008, 153 in 2009, and 157 in 2010, with students from Asian countries constituting the majority.

Fusion of Linguistic and Scientific Research, Language and the Human Mind

One of the most important research programs pursued at the Division of Language and Culture is to explore relationships between language and the human mind. There are a variety of ways to approach this subject, but at present cognitive linguistics is considered one of the most promising methods. This Graduate School is proud of its staff in this field, with a number of members undertaking cutting-edge research.

The Graduate School is also a leading institution in Japan in corpus linguistics. It investigates various aspects of language by using computers to process an enormous amount of linguistic data. Covering a wide range of materials such as law, politics, science, journalism, and literature, this research has great potential to contribute to the information-oriented society of the present-day world. The School initiated this research in Japan, and inaugurated the Japan Association for English Corpus Studies. Since then it has been playing a central role in this field.

Among the related areas of research in the School are machine translation studies, theoretical and applied linguistics, communication studies, and sociolinguistics.

Navigating between Globalization and Localization Pioneer Studies in Language and Culture

An equally important research program of the School is to investigate the complex relationships between language, culture, and society in the present-day world. For example, people with different linguistic and ethnic backgrounds have come to live together in many societies of the world. Under these circumstances, how have different languages, cultures, and ethnicities been treated in these societies, and what implications do such situations have for the world community at large?

The world of today involves a tension between two contradictory forces: on the one hand, its culture is becoming more uniform and homogeneous under strong influences of globalization, but on the other hand, multi-linguistic and multi-ethnic tendencies are being accentuated in many parts of the world. In order to face up to these problems, and to explore the productive ways to overcome them, the Division of Language and Culture is engaged in various educational and research courses and subjects, such as Language and Culture in International Relations, Comparative Studies in Language and Culture, Transnational Cultural Studies, Gender Studies, and Media Studies.

The main objective of the Division of Language and Society is to explore the languages of the world and the cultures and societies based on these languages. Cooperating with the Research Institute for World Languages, its three courses aim to pursue an advanced study in this field, to facilitate the students' research, and moreover, to provide them with high professional skills.

The Course in Applied Studies of Language and Society engages in the study of practical language, language and culture, contrastive language, and the dynamism of language transformation, with a special emphasis on widely used languages such as Chinese and Spanish. The course endeavors to produce coordinators of different cultures who are proficient in languages and have a deep understanding of societies all over the world.

The Course in Area Studies of Language and Society focuses mainly on two areas—Asia and Africa, and Europe and America. Faculty specializing in these areas investigate a variety of subjects taking a world-wide and interdisciplinary perspective: foreign languages, cultural representations, language and cultural resources, and languages and societies. The course gives a prominent research opportunity to students who hope to follow their academic goals.

The Course in Japanese Language and Culture comprises research and education in these fields. It encourages students to acquire knowledge and skills for effective performance in academic and professional fields. It also aims to create human resources who can transmit and convey Japanese and Japanese culture. The course offers a wide range of subjects such as a Special Seminar in Japanese and Japanese Culture.

Toward the Innovation of Education in Language and Culture

Another important activity of the Graduate School of Language and Culture is to explore new frameworks and methodologies for education in language and culture, and to put them into practice. On the basis of the researches mentioned above, the School seeks to provide new perspectives and methods of language education (for example, computer assisted language education and e-learning), and to put them into practice in language classes given to the students of Osaka University. All of the staff members of the School participate in language teaching in the University.

Student column

Name
School/Graduate School at Osaka University (Grade)
Home School/University, Home Country

David Bennett

Graduate School of Pharmaceutical Sciences (Master's year 2)
The Australian National University, Australia

The combination of high quality research, a truly unique culture and society, and the chance to learn a new language made me decide to study in Japan. Though I had no experience with Japanese, the Monbukagakusho scholarship provided me with sufficient language classes before beginning my studies to get a solid foundation. I could then continue studying with free classes provided by the university. Osaka University has excellent research in my field, and is in a great location in the centre of the Kansai region.

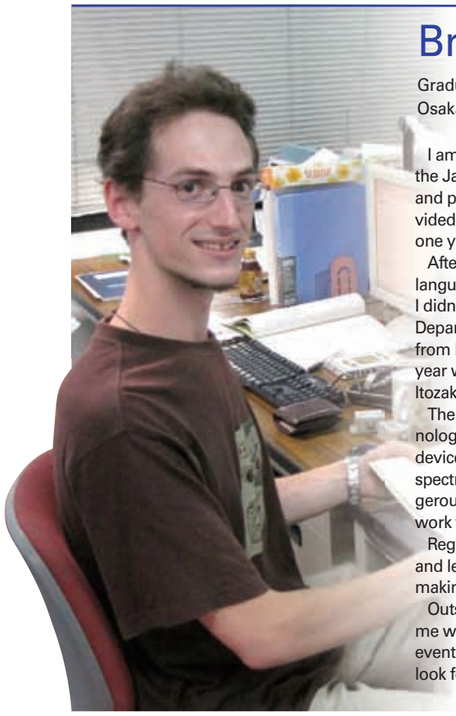
The research in my laboratory focuses on gene regulation and the development of vectors for gene transfer, which may be used in gene therapy applications. We generally use vectors based upon adenoviruses, a non-integrating DNA virus. In the body, conventional adenoviruses express non-specifically in most cell types, which can cause problems due to off-target expression. My research involves modifying the virus genome in order to target gene expression to specific organs and tissues.

In addition to specialized skills and knowledge in my discipline, studying at Osaka University has given me the confidence to go to any situation anywhere and adapt myself to that environment. This adaptability will be invaluable for my future career.

While Japanese students are of course friendly and welcoming, Osaka University also has a varied and lively international student population that provides a support and friendship network. Located right in the middle of the Kansai region, home to many of the best places in Japan, Osaka is a terrific place to live, and Osaka people are said to be the friendliest in Japan. A great university, great place and great people—what else do you need?

Bryn Baritompa

Graduate School of Engineering Science (Master's year 1)
Osaka University, New Zealand



I am now in my 5th year at Osaka University and my 6th year in Japan. I came to Japan on the Japanese government scholarship, and spent my first year studying a Japanese language and preparing for university. The language school, which is now part of Osaka University, provided an immersive learning environment that enabled me to gain reasonable proficiency after one year.

After entering the Engineering Science department at Osaka University I still had occasional language difficulties, but the professors and other students were supportive and helpful and I didn't have any major problems. The first three years of my undergraduate study in the Department of Electronics and Materials Physics involved a wide range of scientific courses from basic mathematics and physics to circuit theory and semiconductors. However the last year was the most interesting and rewarding part of my undergraduate study when I joined the Itozaki lab and worked on group projects as well as my final research project.

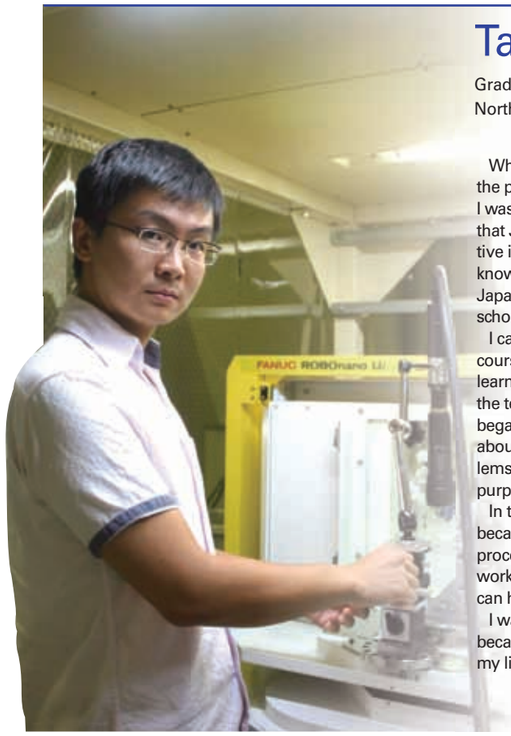
The Itozaki lab consists of 21 students and staff specialising in detection and screening technology which includes near infrared (NIR) spectroscopy, superconducting quantum interface devices (SQUID), nuclear magnetic resonance (NMR) and nuclear quadrupole resonance (NQR) spectroscopy. I belong to the nuclear quadrupole resonance group working on detecting dangerous substances. I enjoy the research as it covers a wide spectrum of theoretical and practical work from computer simulation to hardware and software development.

Regular meetings and presentations by lab members give me the chance to exchange ideas and learn about the other groups' research. The other members are very friendly and helpful, making the lab an enjoyable place to work.

Outside of the lab the departmental Advisement Office for International Students has provided me with advice and support for which I am very grateful. I have taken part in the many social events organized by both the departmental and university international students associations. I look forward to seeing many new faces in the Engineering Science department in the future.

Tang Xinrui

Graduate School of Engineering (Doctor's year 1)
Northeast Yucai Foreign Language School, China



When I was a junior-high-school student, I read some books about the motor and the power transmission because I was fanatical about mini-4WDS. I found that I was interested to study the knowledge of mechanical engineering. It is known that Japan is a developed country that has advanced technology in the automotive industry and mechanical engineering. Going to Japan to study advanced knowledge was the greatest dream of my life at that time. So I selected to study Japanese to get one step closer to my dream after graduated from junior high school without any hesitation.

I came to Japan after I graduated from high school, and now I am a doctoral course student at the department of mechanical engineering in Osaka University. I learned the basal knowledge including dynamics, mathematics and program, and the technology about the machining and design at the undergraduate course. We began our research from the 4th year of the undergraduate course. My research is about the ultraprecision micromachining of hard material. There are several problems in the machining of hard material including tool wear and brittle fracture. The purpose of my study is to solve these problems and to realize precise machining.

In the future, I want to develop the machine tool and the machining technology because I found some problems in machine tool and machining technology in the process of my research. I believe what I have studied at Osaka University, the network of teachers and friends, the experience of the life at Japan and hard working can help me to accomplish my dream.

I want to say that the environment of Osaka University is really very good because it is far from the city center and just nearby the EXPO Park. I'm enjoying my life in Osaka University.

Ashlyn Michelle Moehle

Graduate School of Language and Culture (Doctor's year 1)
University of California, Berkeley, United States of America

Armed with a B.A. in linguistics and a minor in Japanese, with my clothes and a few personal effects crammed into two suitcases and a carry-on bag, I left my parents at the security gate of San Francisco International Airport and boarded a plane for Japan for the first time in my life.

I was determined to make my first journey to Japan more than just a casual visit, and being accepted into the Graduate School of Language and Culture at Osaka University has afforded me the chance to see Japan in way most people can only dream of.

I was immediately struck by the supportive nature of the environment here at Osaka University. Professors truly want to see their students succeed, while at the same time they challenge their students and encourage students to challenge themselves through self-guided research and group projects.

Making friends is also important. A great way to do this is to join one of the myriad social circles affiliated with the university, centered around shared interest in activities ranging from sports to music to art to research. As a practitioner of yoga, I was delighted to discover a yoga circle that meets twice weekly on campus, where members take a break from rigorous study to re-center themselves before diving back their busy student lives.

My advice to anyone considering studying at Osaka University is to harbor as little expectation as possible. Open your mind to diversity and change, open your heart to the infinite possibilities that will spur your own personal growth, and prepare yourself to embrace the challenges that will undoubtedly mark one of the most exciting and rewarding moments in your lifetime.

International Public Policy

Osaka School of International Public Policy

International Public Policy
Comparative Public Policy

Aiming to Produce Future Leaders

Knowledge and ideas that go beyond the conventional framework of existing disciplines are indispensable qualities for meeting the demands of a rapidly advancing borderless world and for solving increasingly complex international problems. It is the mission of the Osaka School of International Public Policy (OSIPP) to train students to become professionals with specialized knowledge and leadership skills to meet these demands, and to carry out path-breaking interdisciplinary research. OSIPP brings together academic staff specializing in both theory and applications, and staff from the central government, the media and private think tanks in order to educate students and researchers to become active leaders in the international arena. In addition to core courses where students obtain a basic knowledge and understanding of methodologies as well as seminars on more concrete topics, OSIPP offers classes which focus on providing students with a hands-on learning experience.

Examples of the 'hands-on' classes are a negotiation class where students actually practice negotiation skills through case studies, a class where project implementation and leadership in organizational operations are addressed both theoretically and practically, and a class for obtaining internship experience.

Flexible Curriculum

Two majors are currently offered: International Public Policy and Comparative Public Policy. The International Public Policy major is committed to research and education covering public policy matters in the international community, such as law and diplomacy, international politics and security, human rights, international finance, trade and economy, development and environmental issues. The Comparative Public Policy major focuses on research and education relating to a comparative analysis of the international society and policy issues that are relevant to the Japanese political, legal, and economic systems.

Students, regardless of their major, are free to choose their supervisor and courses from among the array of professors and courses from either major. Credit exchanges with other graduate schools of Osaka University and with other universities (universities who are party to academic exchange agreements) are also available. For the OSIPP entrance examination, students are required to demonstrate English proficiency in an exam or other means, submit a written research proposal, and be interviewed by faculty members. Enrollment for the Masters and Doctoral courses is held in April, although Doctoral students are also permitted to enter in October as well.

It is possible to complete the Doctor Course in two years if a student's research performance is outstanding.

Eager Students from Diverse Backgrounds

In addition to students who are fresh from the Osaka University's undergraduate programs, there are students with vocational experience who seek to obtain a higher level of expertise, and students from other domestic and overseas universities. Students are highly motivated, possessing an acute sense of awareness of the issues that they confront and have a clear sense of purpose. They take an active interest in fieldwork, internship programs, NGO/NPO activities, and opportunities to study abroad.

Faculty

The faculty members of OSIPP are active in the academic world and renowned for their learning. OSIPP not only works closely with the Graduate Schools of Economics and Law and the Institute of Social and Economic Research of Osaka University, but also actively engages staff from outside the University. Most faculty members are able to give lectures in English.

Career Options after Graduating from OSIPP

OSIPP graduates pursue their careers in a variety of areas: educational institutions, international organizations (the United Nations agencies and the World Bank etc), central government ministries and government-related agencies, think tanks, mass media, foreign affiliated companies and private corporations. There are also many graduates who study abroad, or work for Non-Governmental and Non-Profit Organizations.

Information Science and Technology

Advanced information society rapidly taking shape in 21st century

As the advanced information society rapidly takes shape in the 21st century, this opens the way for people to engage in a much wider range of social activities. To support these developments, the Information Technology (IT) field must break out of its old academic constraints and create new technologies and systems that support the transformation to a new society. More specifically, a strong demand has emerged for a fundamental updating and reform of the curricula and coursework in these areas. To meet this social demand, the Graduate School of Information Science and Technology was established in April 2002.

By providing high-quality research and education, the graduate school aims to advance the fields of information and network technologies. One of the mottos of our school is the fusion of life science and information technology, where advanced information science and technologies are developed by learning from living organisms; in other words, we aim to explore "bio-inspired information technology." Toward achieving this motto's ends, we have been promoting several projects, such as the Global COE program entitled "Center of Excellence for Founding Ambient Information Society Infrastructure," the Formation of Innovation Centers for the Fusion of Advanced Technologies, and the CREST project entitled "Harmony of Groebner Bases and the Modern Industrial Society."

The establishment of an ambient information society is approached as a central theme of our work. In the ambient information society, not only can the user access information in a flexible manner, as in the ubiquitous information society, but also can the environment's computers provide the desired information to the user according to his/her circumstances (i.e., current time, place, and personal preferences). For example, information systems in such a society could provide guidance to users to help them avoid dangers and hazards. To realize such a society, sophisticated breakthrough technologies are needed to tackle the expected technological challenges. The Global COE program sees the "ambient information environment" as "bringing about interactions between the environment and human beings and creating spaces that naturally change to more suitable states and harmonize the interactions between the environment and human beings by blending information technologies in living spaces."

Research and Education

There is a powerful consensus that solutions must be quickly found in the 21st century to address the critical "1G and 3E" issues—that is, issues relating to human genome, electronics, environment, and energy. As the technological foundation for solving theses issues, attention has been focused on IT, biotechnology, and nanotechnology; IT in particular will continue to provide the technological underpinning of the other two. To address these broad aspects of IT, the graduate school offers curricula with the following strengths:

(1) The curricula broadly cover studies from math-related basic theories to advanced application technologies and include various information media as the target, covering a range from hardware and software to the content itself.

(2) The curricula give full attention to the human interface based on advanced IT, such as multimedia engineering, and bioinformatic engineering.

(3) The curricula fully address various social issues inherent in the cyber society supported by advanced information networking technologies.

Based on the above academic strengths, we have been conducting high-level education programs. These include the Fostering Advanced Human Resources in information and Communication programs entitled "IT Spiral: IT Specialist Program Initiative for Reality-based Advanced Learning" and "IT Keys: IT specialist program to promote Key Engineers as securitY Specialists."

In the Global COE program, we are fostering young scientists and engineers (Global Principal Investigators) who can demonstrate three key capabilities: design ability to conceive, research, and develop new information systems; communication ability to work with an international outlook; and management ability to carry out collaborative projects.

Graduate School of Information Science and Technology

Pure and Applied Mathematics
- Combinatorics
- Applied Geometry
- Discrete Structures
- Applied Analysis
- Mathematical Science
- Computer Assisted Mathematics

Information and Physical Sciences
- Operations Research
- Nonlinear Systems, Modeling and Optimization
- Information Photonics
- Systems Engineering
- Architecture for Intelligence
- Universal Interactive Agents

Computer Scienc
- Algorithm Engineering
- Software Design
- Software Engineering
- Supercomputing Engineering
- Intelligent Media Systems
- Universal Society

Information Systems Engineering
- Integrated System Design
- Information Systems Synthesis
- Integrated Systems Diagnosis
- Dependability Engineering
- Integrated Media Environment
- Advanced System Architecture
- High Realistic Communication

Information Networking
- Advanced Network Architecture
- Intelligent Networking Systems
- Information Sharing Platform
- Mobile Computing
- Ubiquitous Network
- Cyber Communication

Multimedia Engineering
- Multimedia Data Engineering
- Information Security Engineering
- Human Interface Engineering
- Business Information Systems
- Applied Media Engineering
- Multimedia Agent Systems
- Knowledge Cluster

Bioinformatic Engineering
- Genome Information Engneering
- Metabolic Engneering
- Bio-System Analysis
- Symbiotic Network Design
- Human Information Engineering

Frontier Biosciences

Fusion of Diverse Disciplines to Study Nanobiology to Brain Science

Graduate School of Frontier Biosciences is a new graduate school dedicated to advancing the forefront of life sciences.

Established in April 2002, the school has assembled, from within and outside Osaka University, top-level researchers and educators who are experts in a wide variety of disciplines, including medicine, biology, physics, and engineering. The creation of the new department is based on our strong belief that humans and animals are not merely a simple aggregate of genetic materials, molecules, and biological structures. It is rather an ever-changing complex dynamical system, whose understanding necessitates a true interdisciplinary systems approach. Graduate School (and Department) of Frontier Biosciences consists of 6 main groups of laboratories, and affiliated laboratories. The graduate program in Frontier Biosciences offers a unique 5-year intensive training culminating in a doctoral degree upon successful completion of the program. Our goal is to nurture students and scientists in our active research environment so that they become fully equipped for taking biosciences to the next height.

Graduate School of Frontier Biosciences

Frontier Biosciences
- Nanobiology
- Biomolecular Networks
- Integrated Biology
- Organismal Biosystems
- Neuroscience
- Biophysical Dynamics
- Special Research Promotion Group
- Biomedical Engineering
- Collaborative institutes (Immune Regulation)

Unlike most graduate schools in Japan that offer separate master's and doctorate programs, we offer a 5-year intensive Ph.D. program to foster top-level professionals in biosciences and related fields. Completion of the program does not necessarily require 5 years. If desired, exceptional students can complete the program on an accelerated schedule. Teaching staff have backgrounds in a wide variety of disciplines, including medicine, biology, physics, and engineering. Equally diverse are our students who also come with undergraduate (and sometimes graduate) background in many different fields. To ensure multidisciplinary training and research activities, we have lowered barriers among laboratories by organizing all groups under a single department, the Department of Frontier Biosciences. Furthermore, each student chooses multiple advisors from different disciplines to provide a broad training in diverse research areas. We are also emphasizing collaboration with industry in research and education. In order to facilitate involvement of researchers from industry in our program, we are actively developing various industrial liaison programs, and have successfully solicited endowed chairs.

All life is composed of basic biological elements like nucleic acids, genes, proteins, and membranes. Over several decades, our understanding of the life sciences has greatly advanced by bringing together an assortment of different fields including genetic engineering, molecular biology, physiology, and medicine. The next stage is to clarify how these different elements dynamically interact and change in order to establish the diverse and complex function seen within all biological systems.

For this, a new framework to approach the life sciences is needed. Graduate School of Frontier Biosciences, therefore, has broken this task into three. The first and perhaps most fundamental is further understanding of the function of various biological systems. At the same time, it is necessary to understand the basic properties of the elements involved and also to clarify how the environment helps determine function.

Overall, Graduate School of Frontier Biosciences seeks to understand the underlying principles and mechanisms that decide how a biological system functions. To achieve this, non-traditional fields like physics and engineering must be more incorporated into the life sciences. The school, therefore, has brought in the best minds from the life and physical sciences to create a new standard for research and education in order to make the next leap in life sciences research.

In this regard, the school is composed of seven core research themes, with several other complementary ones. The Ph.D. program, which normally takes five years, is designed so that a student becomes proficient in different fields ranging from medicine to engineering in order to become a leader for the next generation of researchers.

Student column

Monika Ostrowska

Osaka School of International Public Policy (OSIPP)(Master's year 1)
Osaka University, Poland

I began studying Japanese language in 2003 at Warsaw University in Poland. One year later the Embassy of Japan introduced the five-years scholarship program for Polish students who wish to graduate from a Japanese university. I decided that studying in Japan would be a great opportunity for improving my Japanese language ability and that the experience of living abroad would benefit my educational and professional development. I chose Osaka University that is well-known in Japan for the quality and excellence in education.

After having graduated from the Human Sciences Faculty of Osaka University, where I majored in Cultural Anthropology, I have entered Osaka University's OSIPP. I chose to study there because of the high academic standards and the broad curriculum, which offers a variety of lectures and seminars in political science, international law and economics. Studying at OSIPP has been a valuable experience that helps me enhance my academic background. I am interested in Japanese diplomacy and the United Nations, and there are many lectures and events held at OSIPP that are a great opportunity to deepen knowledge about my research. I find the assistance of my supervisor Professor Toshiya Hoshino very helpful and important. OSIPP is supportive of international students and studying there encourages cooperation. The atmosphere and the facilities have had a positive influence on my research. After graduating I would like to find a job in Japan, but my ultimate goal is to work for the Polish Ministry of Foreign Affairs as a specialist in Japanese diplomacy.

The decision of coming to Japan has been truly life-changing for me. Living and studying in Japan have been valuable experiences, especially because of the ability to learn about the Japanese culture and to build new friendships. I recommend OSIPP to anyone who would like to enhance their educational background and study in a unique atmosphere.

Christian Nitschke

Graduate School of Information Science and Technology (Doctor's year 3)
Bauhaus University Weimar, Germany

In 2005, my former supervisor, Oliver Bimber, gave me the opportunity to study with Haruo Takemura, a well-known professor in augmented reality and 3D user interfaces at Cybermedia Center, Osaka University. During that time, I developed a method to rapidly reconstruct a 3D model from multiple cameras. The professional collaboration, the superior equipment, and the remarkable support from university facilities and staff are only some of the aspects which influenced my decision to return for a PhD in 2007.

My field of research is computer vision which aims at developing machines that can see. I specialized in the analysis of eye features and light reflections from images of human faces. With that knowledge, I am currently developing an easy-to-use eye gaze tracking method for which I have submitted a patent application. The technique lies at the heart of potential new interfaces or intelligent sensors in psychology and medicine.

Succeeding with a PhD requires strong will and commitment to independently make advances and improve on oneself. I got the opportunity to supervise Japanese and international students and was encouraged to publish in journals and present at major conferences. This helped me acquire broad skills and create a network which will be a valuable key in the future. I plan to return to Germany and work in R&D, but I will definitely maintain a relationship with Japan on both a personal and professional level.

In this era of rapid globalization, it is important to understand global demands, and studying abroad provides the perfect opportunity for this. To anyone looking for a once-in-a-lifetime chance to study at a top university in a country full of hospitality, and to meet highly motivated people from all over the world, I highly recommend Osaka University.

Name
School/Graduate School at Osaka University (Grade)
Home School/University, Home Country

Ricardo Alchini

Graduate School of Frontier Biosciences (Docter's year 2)
Federal University of Santa Catarina, Brazil

Becoming a good scientist has been my priority since very early in my undergraduate studies, and it motivated me to move from my country, Brazil, if necessary to find a better environment to do research. I was looking for a place where I could experience being in contact with some of the best specialists in Developmental Neuroscience, learn new techniques and become a competitive researcher, and Osaka University seemed to be able to fulfill all my expectations.

In fact, Osaka University is among the top universities in the world and has many well established groups in the various different aspects of Neuroscience, what could give me a consistent and complete education in this field.

Moreover, coming to Japan seemed to be a very good opportunity, because of the well-known quality of the Japanese facilities and equipments, at the same time that it would allow me to be immersed in a culture totally different of mine.

When I started to contact some professors, looking for someone who could become my future adviser, I was surprised at the kindness of the professors from Osaka University. Actually, Osaka is located in the heart of Kansai region, famous for having the best of Japanese cuisine, the finest of Japanese classic culture and the warmest people in this country. I thought it would be fundamental to build a good relationship with my adviser and colleagues, so I decided to come to Osaka University because of both its academic excellence in my field and the affinity I had with my adviser and his work from the very beginning.

Nowadays, I am pursuing my doctoral studies under supervision of Professor Nobuhiko Yamamoto. Here, my research is related to the molecular mechanisms underlying the formation of some specific connections between neurons from different regions of the brain.

I believe that studying at Osaka University has been a very positive experience. My adaptation to this new life was easier than I expected thanks to all the support I received from my laboratory colleagues and university staff. Communication and culture gaps are not a real problem if you try to be attentive to the people surrounding you, I feel like I have grown a lot as a human being since I came to Japan because I need to be much more sensitive to understand what people want or expect from me.

In the near future, I just plan to keep on taking advantage of the excellent education I have available to me and build a solid academic career with the help of Osaka University.

Law School

One of the Nucleus Educational Institutions for Japan's Judicial Reform

The increasing number of lawsuits in Japan shows that the Japanese have come to rely on legal procedure to settle their disputes as much as the Americans. In addition, the complexity and diversity of these actions necessitate legal professionals playing an important role.

Despite the increasing demand, lawyers who have enough ability and expert knowledge are in short supply, and such shortage has caused delays in many suits. To supply sufficient quantity and quality of legal specialists to meet the diversifying demands of the society, Osaka University Law School (OULS) is designed to educate professional lawyers.

Fairness and Diversity

Since its establishment in 2004, OULS has not only provided profound legal instruction to its students, but also educated them for broader attainments in society and culture, strict ethics and rich humanity.

The number accepted each year is 80. A part of them belong to a 3-year study course while those who have already earned the law degree belong to a 2-year course. For admission, there is no restriction on age, profession, and knowledge of law. Whether an applicant has graduated from the Law Faculty or not, any university graduate can apply for admission.

Curriculum Designed for Systematic Learning

The curriculum is composed of four courses: "Basic Law Courses", "Basic Courses in Legal Practice", "Fundamental Legal Study and Adjacent Courses", "Advanced Courses". The "Basic Law Courses" provide students with the fundamentals of law, such as constitutional law, administrative law, civil law, criminal law, commercial law, civil procedure law, and criminal procedure law. The "Advanced Courses" and the "Fundamental Legal Study and Adjacent Courses" give students diverse knowledge, which has not been covered by the "Basic Law Courses". The "Basic Courses in Legal Practice" are designed to put the theory into practical use.

Students can study each category systematically. Moreover, the curriculum, throughout the study of the basic subjects, is well designed to provide enough legal knowledge to those who study law for the first time. Subsequently, abundant practical education will improve the student's legal skills.

Educating Business Lawyers

The most noteworthy characteristics of the curriculum of OULS are the following:

All lessons are conducted by the Socratic Method in small classes. Basically, all classes are limited to less than 50 students. These classes are not simply one-way lectures, but interactive discussions between professors and students (Socratic Method). Therefore, our lessons have high efficacy in legal training. Besides, in order to introduce the latest outcomes of study into the education, OULS cooperates with the Graduate School of Law and Politics of Osaka University and Osaka School of International Public Policy.

OULS emphasizes the training of business lawyers. Taking advantage of the geographic feature of being located in one of the most prosperous commercial areas in Japan, the School arranges various subjects requiring solution of legal matters, which occur during the foundation, operation, and dissolution of a corporation; for example, corporate law, tax law, law on corporate reorganization, intellectual property law, and international transaction law.

In addition, to satisfy the demands of a "legal-oriented" society, OULS encourages students to acquire professional knowledge. In order to provide practical training, the School has internship programs in law firms or in legal departments of corporations.

Being in the Spearhead of the New Era

Outside the classroom, OULS (Advanced Legal Education and Career Center=ALEC-Center) has some projects for grappling with up-to-date matters. In 2007 and 2008, we held symposiums and guidance on forehead issues of lawsuits or disputes. These projects can help students to decide on their own direction as a legal expert.

Success in Bar Exam and in Business

The new bar exam for law school graduate students has been planned to be less competitive than the long-established exam. It is assumed nevertheless to be highly competitive. Succeeding in the new bar exam is, of course, our primary goal.

However, OULS aims to provide students with sufficient legal knowledge and skills whatever legal profession they might choose. Therefore, the students' successful future is the School's final goal.

United Graduate School of Child Development, Osaka University, Kanazawa University and Hamamatsu University School of Medicine

Mental Health of Children is at a Crisis Point

The biggest challenge of present-day Japan in a time of low birthrates is how to raise children with sound minds. The reality is, however, that children's mental health is at serious risk of being damaged. Juvenile crimes caused by children with mental damage, suicidal cases from being bullied, and the number of children with developmental disorders such as pervasive developmental disorders (PDD) or attention-deficit hyperactivity disorder (ADHD) are increasing. Psychiatric disorders like major depression and eating disorders are increasingly common among younger people, and elementary school cases with schizophrenia are reported at a highlevel.

Development of Human Resources in a Matched Manner to Social Requirement

In addition to the absolute shortage of the number of specialists in child mental health, these specialists, either psychologists, nurses/health nurses or teachers, deal with problems utilizing their own training and educational backgrounds. There is no formulized way for treating problems of children's minds; these specialists often lack enough medical knowledge.

In order to overcome these problems, it is most reasonable that we try to re-educate these specialists with an integrated field of study consisting of brain science, psychology and education. However, a huge obstacle for this education in a given institute is the complexity of mental health and the diversity of specialists required.

This is why Osaka University, Kanazawa University and Hamamatsu University School of Medicine have united and established the United Graduate School of Child Development where child specialists with diverse backgrounds and work experience learn and conduct research together.

Our aim is (1) to cultivate researchers specialized in "The Child's Mind and Developmental Brain Science," a novel research field, (2) to cultivate specialists with an interdisciplinary background in order to meet the social requirement, and (3) to create tight networks between relevant specialists.

The Long-Standing Tradition and Achievement of our Universities

Osaka University, Kanazawa University, and Hamamatsu University School of Medicine are highly rated by long-standing achievements in brain research, the tradition of communicational education in the clinical setting, and the world's most advanced products about clinical psychiatric research, respectively. The United Graduate School of Child Development was established by the close alliance and cooperation of these three academic institutes, which are located in the metropolitan areas of Kinki, Hokuriku, and Toukai districts.

In order to get the best of these three universities, to integrate brain research (utilizing molecular biology, neuroimaging and electrophysiology) and sociopsychological method (based on large-scale epidemiological survey), and to investigate how to make a tight network by which specialists cooperatively care for problems of child mental health, we have created three research horizons: Psychological Support for Child Development (Osaka University), Human Communication Science & Intervention (Kanazawa University), and Social Services for Developmental Disabilities (Hamamatsu University School of Medicine). We aspire to the dynamic expansion of our activities from these three bases to all over Japan.

3-year Doctoral Course is Started for the Next Leap Forward

The goal of the United Graduate School of Child Development is to cultivate and mentor specialists of child mental health with diverse backgrounds and leading-edge researchers on "the child's mind, developmental brain and its disturbance" into indisputable leaders via an interdisciplinary field consisting of medicine, psychology and education.

Therefore, admission to our 3-year doctoral graduate school will require students to have obtained a master's degree in psychology, education, health sciences, nursing science, or social welfare; otherwise, students are required to have comparable work experience as a medical doctor, school teacher, school counselor, nurse, speech therapist, or clinical psychologist. By graduation, students are expected to have jumped from a specialist in their own background to multidisciplinary leaders.

United Graduate School of Child Development, Osaka University, Kanazawa University and Hamamatsu University School of Medicine

Child Development
- Developmental Neuroscience (Osaka University)
- Socio-Cognitive-Neuroscience (kanazawa University)
- Neuropsychological Development and Health Sciences (Hamamatsu University School of Medicine)

University Libraries

The University Library plays an important role as a center of information in supporting all the teaching and research activities at Osaka University. Consisting of four major libraries - the Main Library on Toyonaka Campus, the Life Sciences Library and the Science and Engineering Library on Suita Campus and the International Studies Library on Minoh Campus—and some small departmental libraries, the library provides quality services and resources to address the diverse user needs of various fields and levels. While every user can use any of these libraries, each library has its own service policies and collections which meet the needs of the users. Since the foundation of Osaka University in 1931, the library has been developing its collection and today it boasts a collection of over 3.9 million books and about 71 thousand periodical titles, which makes it one of the largest library collections in Japan.

In recent years, electronic access to academic resources has become more and more important for research and education. The library places a high priority on providing university members with access to electronic resources through the university LAN such as major databases, about 15,500 electronic journal titles and 7,000 titles of electronic books. The library also provides networked PCs, information wall sockets and wireless LAN for users to access resources on the internet when they are in the libraries.

Digitizing some of the valuable materials in library's collection such as "Kaitoku-do" materials and putting them on its web site is one of the activities to make its collections available to the general public. Library web site (www.library.osaka-u.ac.jp/e-index.html) is a very useful starting point to find and get information for study and research. It leads users to OPAC (online catalog), databases, electronic journals, electronic books, information on library news and services.

Main Library

www.library.osaka-u.ac.jp/guide/e-honkan.htm

Main Library is the only library on the Toyonaka Campus and serves the educational needs of all fields and the research needs of schools on Toyonaka Campus such as letters, law, economics, science, engineering science, etc. It boasts a total area of 19,000 square meters—second largest as a national university's main library in Japan, over 1,400 seats and over 1 million volumes of printed materials. It also functions as the central library of the whole university.

Learning Commons located at the Main Library were opened in June 2009. This new space provides library and technology services in an environment that fosters collaborative work. In the space, library staff and Teaching Assistants help university members to resolve their own academic projects.

Life Sciences Library

seimei.library.osaka-u.ac.jp/e-index.html

The Life Sciences Library on the Suita Campus was established in 1992 as a general library for biosciences such as medicine and biology. It plays a central role in the provision of academic information in biosciences, and is attracting nationwide attention with its unique services using new media and networks. Since 1977, it has been serving as a designated library for the National Center for Overseas Periodicals (NCOP). Currently, it has about 18,600 journals, including about 1,500 current titles of foreign journals.

Science and Engineering Library

suita.library.osaka-u.ac.jp/english/

The Science and Engineering Library on the Suita Campus, was established in 1970, the East Building was annexed in 1986. It contributes to the education and research activities of the School of Engineering, the Graduate School of Engineering, the Graduate School of Information Science and Technology, and other related research institutes.

In 2009, the West Building was retrofitted making it into an earthquake-proof structure. Following this retrofittings, we have opened a new "Learning Commons" where library users can have a discussion using PCs, whiteboards, books and journals at the same place. On the other hand, quiet spaces are also provided for users.

Presently, the Library holds about 480,000 technical books and 10,000 journals on science and engineering.

International Studies Library

minoh.library.osaka-u.ac.jp/english/

The International Studies Library, the University's newest library, was the former Osaka University of Foreign Studies Library, renamed and reorganized after the merger of Osaka University and Osaka University of Foreign Studies in October 2007.

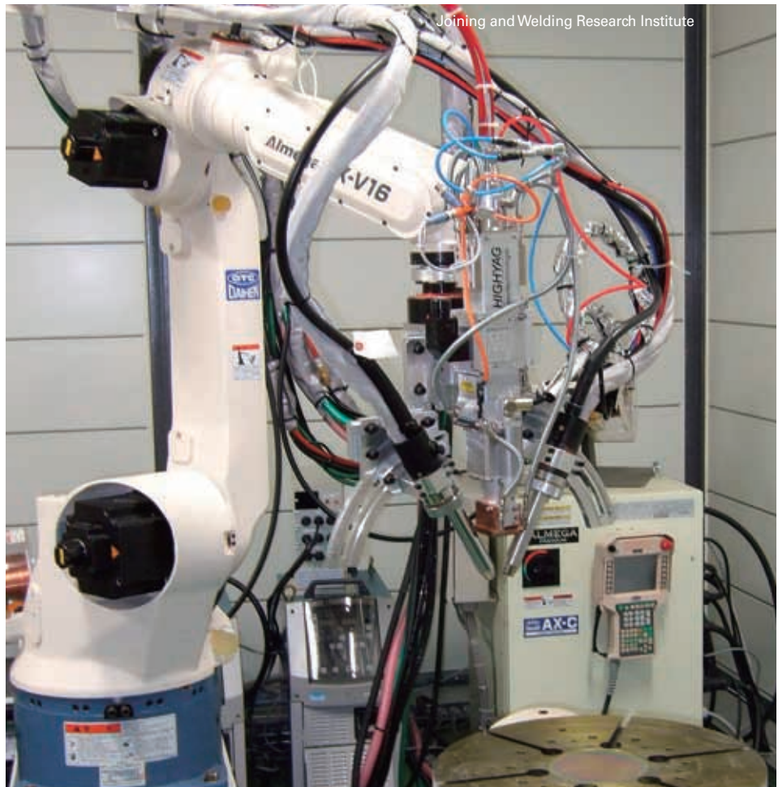
The Osaka University of Foreign Studies Library was estabilised in 1921, and moved to the present campus in 1979. Holding an abundant collection of 620,000 volumes, it is one of the nation's top libraries in the fields of international studies and linguistics. Now the International Studies Library continuously serves the educational and research needs in these fields and related sciences on the Minoh Campus.

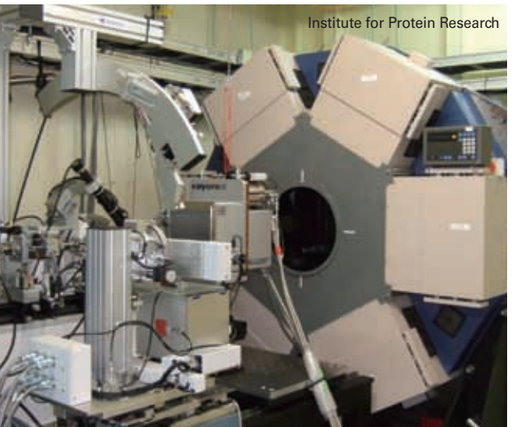
Research Institutes


Institute of Scientific and Industrial Research


Research Institute for Microbial Diseases

Institute of Social and Economic Research


Joining and Welding Research Institute


Institute for Protein Research

Research Institute for Microbial Diseases

www.biken.osaka-u.ac.jp/e/

The Research Institute for Microbial Diseases was originally established as a five-department "Research Center for Communicable Diseases" in 1934. Basic research on infectious disease, immunology, and cell biology is the Institute's principal focus. The results of research in these fields at the Institute have contributed considerably to the diagnosis, prevention, and treatment of infectious diseases, immunological diseases and cancer, as well as to progress in basic biomedical science. In 2005, the Institute was reorganized to constitute three research divisions that represent 15 departments together with three attached centers for specialized research on infectious disease and genome information. Moreover, the Research Collaboration Center on Emerging and Re-emerging Infections was founded in Bangkok in collaboration with the National Institute of Health, Thailand, to defend people against possible emerging and re-emerging infections. The Institute was selected as "the 21st Century COE programs" on the theme of "Combined program on microbiology and immunology" (2003-2007). In 2008, the Institute was also selected as "Global COE programs"on the theme of "Frontier Biomedical Science Underlying Organelle Network Biology"

The Institute accepts and trains Master and Ph.D. candidates in the medical and biological sciences. At present, more than 200 full, associate, and assistant professors, research associates, graduate students and research fellows pursue studies in microbiology, oncology and molecular biology at the Institute.

Institute of Scientific and Industrial Research

www.sanken.osaka-u.ac.jp/index_e.html

Based on the strong desire of the business leaders of private enterprises in Osaka area, the Institute of Scientific and Industrial Research was founded in 1939 as a part of Osaka University. The purpose of the Institute is to study science necessary for industry and their applications. Since then, the institute had developed into one of the leading research organizations for science and engineering in this country.

The institute had increased research areas and laboratories; 25 departments and 3 research facilities, with research extensively conducted in the fields of electronic engineering, computer science, metallurgy and inorganic chemistry, organic chemistry, biochemistry, polymer chemistry and radiation science. We take a leadership in Nanoscience and Nanotechnology through Nanotechnology Center which is the nation's 1st university-attached Nanotechnology Center.

In 2009, ISIR had been greatly restructured into the institute for multidisciplinary research composed of 3 major divisions (information & quantum science, material & beam science, and biological & molecular science) and expanded Nanotechnology Center with new Center for Research Education and Training, International Collaboration Center and Research Laboratory of Quantum Beam Science and restructured Comprehensive Analysis Center.

From 2010, as a headquarters of the Network Joint Research Center for "Materials and Devices", we established the nation-wide collaboration system. In addition, we promote new style academia-industry cooperation through SANKEN Incubation Research Building.

Institute for Protein Research

www.protein.osaka-u.ac.jp/index_e.php

Institute for protein Research (IPR) was established in 1958 as an inter-university joint-use facility attached to Osaka University. Protein research has made a remarkable progress for the past 50 years to lead a deep understanding of structures and biological functions of proteins and their complexes. IPR has made a significant contribution to the progress and its organization has been expanding through strong supports from the science community. Now IPR consists of four divisions of Protein Chemistry, Protein Structural Biology, Integrated Protein Functions and International Collaboration Research, and Research Center for Structural and Functional Proteomics in affiliation with IPR. About 50 faculty members, 60 post-docs and 70 supporting stuffs are working in a total of 17 laboratories. We are heavily involved in the education at Graduate School of Science, Graduate School of Medicine and Graduate School of Frontier Biosciences to supervise about 100 graduate students. IPR has been operating Worldwide Protein Data Bank (wwPDB) and Biomagnetic Resonance Data Bank (BMRB) as one of three worldwide centers. Several large and unique facilities of IPR, such as synchrotron beam line (SP-ring8) and the superconducting NMR (800 and 950 MHz) are opened for joint usage/research. Every year, IPR conducts collaborative works with a total of nearly 100 researchers and graduate students from outside institutions including overseas and holds 15 seminars for over 1500 participants.

The Institute of Social and Economic Research

www.iser.osaka-u.ac.jp/index-e.html

ISER was founded in 1954 as a research institute attached to the Faculty of Economics, and in 1966 became independent of the faculty. Since its inception, ISER has employed first-rate researchers and has conducted internationally recognized research in modern economics. In 2010, ISER was designated as Joint Usage Research Center for behavioral economics by the Ministry of Education, Culture, Sports, Science and Technology.

ISER faculty members engage in both theoretical and empirical research on a wide variety of topics ranging from microeconomics, macroeconomics, international finance, and experimental economics to problems facing Japan such as the recession, the financial crisis, the environment, and an aging society. A newly created the Research Center for Behavioral Economics affiliated with ISER aims to establish the first hub of research in behavioral economics in Japan. ISER edits and publishes the International Economic Review, one of the most highly ranked scholarly journals of economics in the world, in conjunction with the Department of Economics at the University of Pennsylvania.

ISER has two visiting foreign scholar positions, and roughly five foreign researchers are invited every year to Osaka to engage in joint research with ISER faculty members.

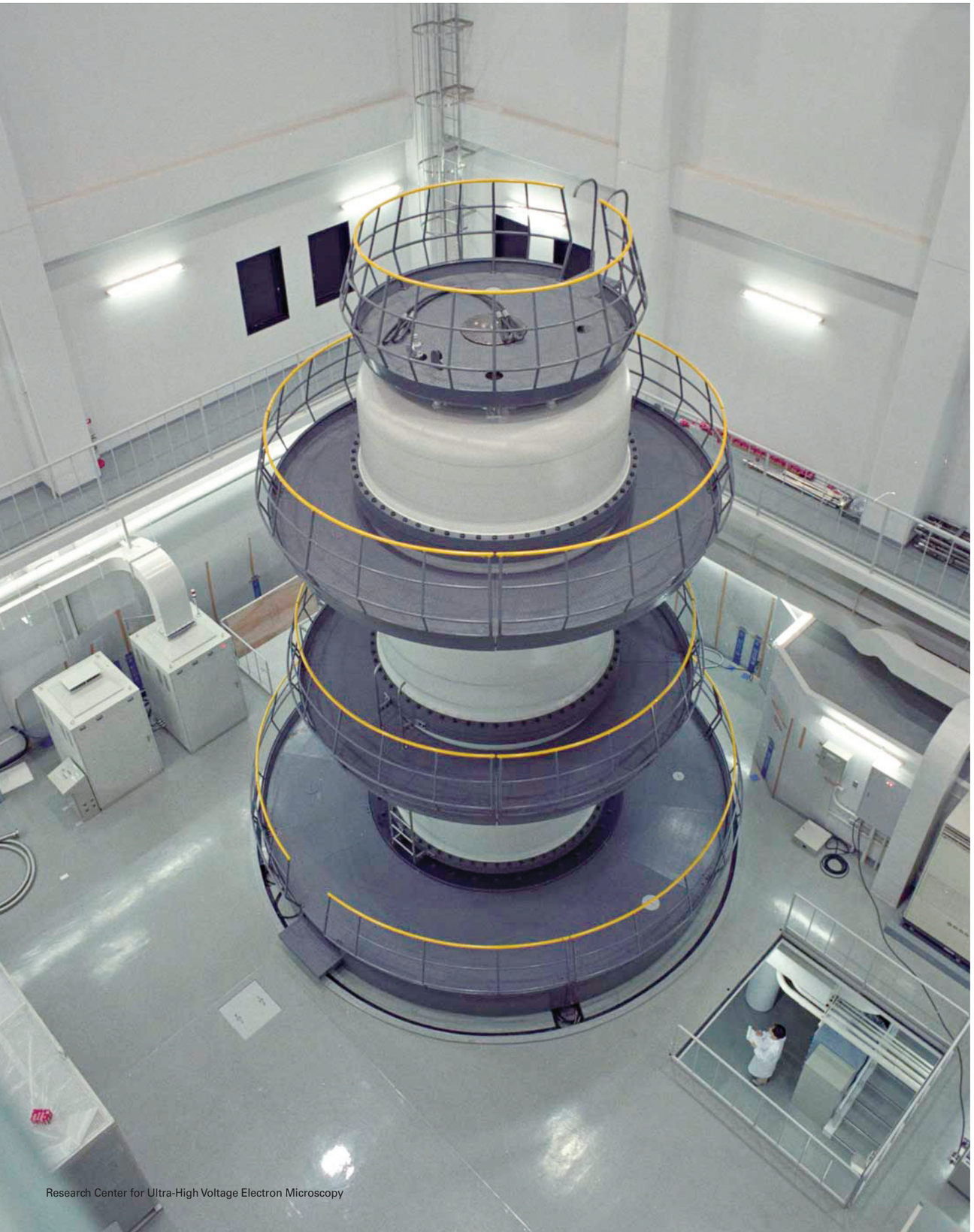
Joining and Welding Research Institute

www.jwri.osaka-u.ac.jp/index_e.jps/

The major objective of JWRI, one of the Nationwide Joint-Use Research Institutes, is to promote the research on the fundamental mechanisms of welding and joining processes and to develop the industrial applications of the processes. In 2010, about 235 researchers conducted the joint works in JWRI. The processes are absolutely essential not only for production of large constructions but also for micro and nano-sized structures. Corresponding to the recent research trends, JWRI established Smart Processing Research Center (SPRC) by reorganizing the two attached Centers. The Institute has three research divisions with ten departments and SPRC with seven departments. The research divisions are Materials Processing System (four departments), Materials Joining Mechanism (three departments) and Functional Assessment (three departments).

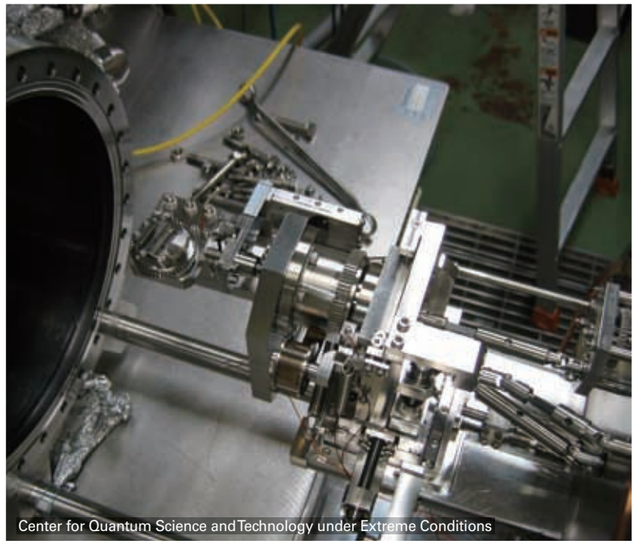
Obviously, the welded and joined structures are required to have high performance in the field of mechanical, physical and chemical properties irrespective of the materials used. To secure the high reliability of joined structures, JWRI is actively promoting the research at joining interface that offers the adequate joining conditions and microstructures. To correspond to the social needs, computer simulation, information technology, environmentally conscious processing and nano-technology are widely applied to reveal the many characteristics of joints and interface. The materials used for joining and welding are a variety of metals, ceramics, organic materials, and composites.

Joint-Use Facilities



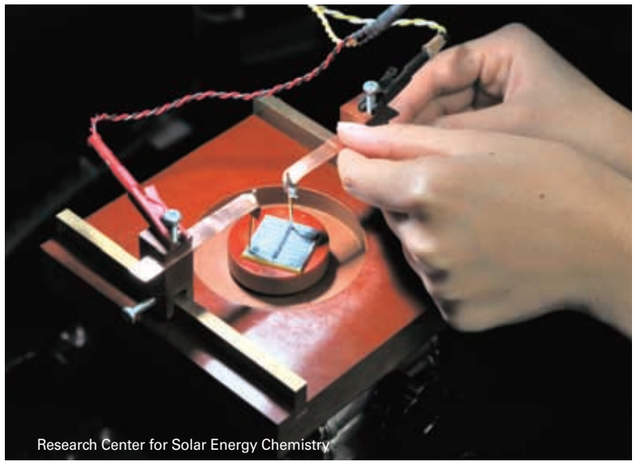
Research Center for Ultra-High Voltage Electron Microscopy

Museum of Osaka University

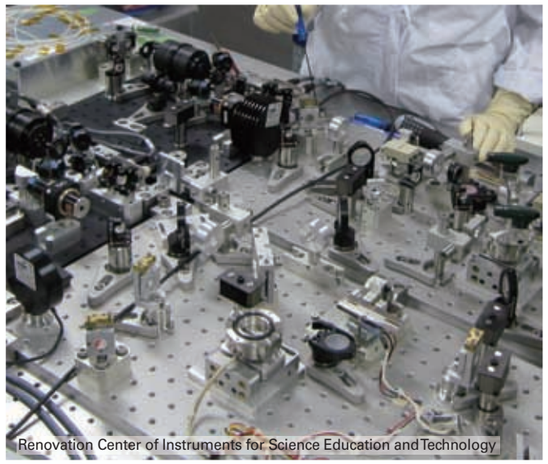


Center for Quantum Science and Technology under Extreme Conditions

International Center for Biotechnology



Research Center for Solar Energy Chemistry



Renovation Center of Instruments for Science Education and Technology

Low Temperature Center

www.ltc.osaka-u.ac.jp/

The low temperature center was established in 1971 as the joint-use facility and has been managed by the two branches of Toyonaka and Suita campus. The main purpose of the center is a stable supply of liquid refrigerants, such as liquid nitrogen and liquid helium, at a low price in order to support the researches at low temperatures. Liquid nitrogen and liquid helium are necessary for the experiments at low temperatures and they are widely used in various research areas. In the low temperature center, liquid helium is produced by using the helium liquefier equipped in the center, by obeying the High Pressure Gas Safety Law. Since helium is extracted from the natural gas, and Japan imports 100% of its use, the market price of helium is very high. In order to reduce the research expense, helium is recycled in Osaka University. Namely, all the evaporated helium gas is recovered and liquefied again by using the helium liquefier. The recovered gas purity is strictly observed so as not to cause damages to the liquefier. In this way, we can use liquid helium much cheaper than the market price.

In order to support the researches at low temperatures, the low temperature center not only supplies the liquid refrigerants but also lends vessels (liquid refrigerant storage), vacuum components and test equipments to the researchers. The low temperature center also provides experimental space for co-operative researches. In addition, the low temperature center performs its own research at low temperatures and also gives training programs for safety use of liquid refrigerants as well as high pressure gasses.

Research Center for Ultra-High Voltage Electron Microscopy

www.uhvem.osaka-u.ac.jp/

The Research Center for Ultra-High Voltage Electron Microscopy (UHVEM), Osaka University, has been playing an important role in the progress of instrumentation and application of UHVEM. A 3MV UHVEM, which was developed by the staffs of the center in collaboration with Hitachi Co. Ltd., is installed in the center and is used quite effectively in research in the fields of material science, medicine, and biology.

The maximum accelerating voltage of the UHVEM is 3.5 MV, the world's highest accelerating voltage. The most important advantage of the UHVEM is the remarkable increase (about ten times as large as that of conventional electron microscopes) of the maximum observable thickness of specimens.

Namely, in the case of biological samples, 6μm-thick specimens can be observed. Even in the case of nonbiological samples, it is possible to use 5μm-thick specimens, depending upon materials and objects of study. This UHVEM thus overcomes the limitations of conventional 0.1 MV class electron microscopes; the properties of bulk materials under various conditions can be studied in situ in atomic scale. In order to carry out these in-situ studies, many sorts of devices for in-situ specimen treatment, such as for heating, cooling, stressing and current feeding, have been developed in the center. The center is open not only to researchers at Osaka University, but also to those from other institutions. A project in which scientists at UCSD in California, U.S.A. remotely control and operate the UHVEM via advanced international networks, to study the microstructure in neurons, is now in progress and successful results have been accumulated.

Radioisotope Research Center

www.rirc.osaka-u.ac.jp/

Radioisotopes are used not only for basic science but also widely in medicine and industry. At Osaka University, more than a third of staff working in science, medicine, engineering and pharmaceuticals deals with radiation and radioisotopes in their works. And this trend is increasing every year.

The center secures radiation safety in the radiation facilities within the campus by imparting training to those who work at these facilities, while promoting their own advanced research and technology concerning radiation.

The center performs research covering a wide range of topics from science, engineering, medicine, and pharmaceutical science, such as nuclear physics and nuclear chemistry using radioisotopes, radiochemistry, material science, analytical chemistry, radiation chemistry, life science, dosimetry, and radiation protection. Every year, there are more than 40 topics of joint research and over 550 people utilize the facility. Several hundred students use the facilities every year for practical training.

Research Center for Environmental Preservation

www.epc.osaka-u.ac.jp/english/eng_home.png/home.htm

Through today's dizzying pace of scientific and technological development, we have come to enjoy a rich and abundant culture and social lifestyle. As a result, we have come to use not only the resources that exist within the natural environment but a huge number of man-made substances as well. While on the one hand humankind has reaped the benefits, we are also faced with complex and ever-widening environmental and energy-related problems and other issues. Based on such conditions and on the proposal of the Environmental Protection Commission, the Research Center for Environmental Preservation was founded in 1994 as the administrative organ that plays a central role in the research, education and instruction related to the environment and the safety on an all-campus level.

Green chemistry is the foundation of strategies that respond to various environmental issues, which are continuing to grow in complexity and diversity.

This center is currently involved in the development of environmental benign method in organic synthesis, and highly selective and sensitive methods for the analysis of hazardous chemical substances.

Furthermore, this center executes planning, advice and management strategies for treating wastewater and other wastes that are generated by the educational and research activities taking place at this University, administers the processes for rendering them harmless, and maintains the "Osaka University Chemical Communication System (OCCS)".

Center for International Education and Exchange

www.isc.osaka-u.ac.jp/english/

This center was established in 1994 as International Student Center, renders useful services to international students, including various Japanese language programs, consultation and advice on everyday life and schoolwork, as well as coordination of short-term student exchange programs. This has also offered a variety of cross-cultural exchange programs to promote communication and exchange among international students, Japanese students and near-by communities.

At the heart of Suita Campus, the Intercultural Collaboration Hall (IC Hall) opened in April 2002. Then in April 2010, International Student Center was reorganized as Center for International Education and Exchange (CIEE). In the hall there are the CIEE, the Support Office for International Students and Scholars, and the Suita Student Service Center, where all student-related services are provided to both Japanese and international students.

The first floor of the IC Hall is used by the Suita Student Service Center, which handles services for Japanese and non-Japanese students as well as International Student Affairs Division. The second and third floors are occupied by CIEE. The Support Office for International students and Scholars, which is a part of CIEE, handles various services, including applications for Certificate of Eligibility and support of housing issue for international students and scholars.

The second floor has lecture rooms and Information Room for International Students (IRIS), which provides with Japanese language classes, information on schoolwork and daily life, as well as consultation and guidance for international students. Students can broaden friendships and communication with both international and Japanese students, as well as faculty and volunteer workers, by actively participating in a variety of the center's support programs and exchange programs for international students.

At CIEE, professors, associate professors and welfare advisors in cooperation with Mental Health Counselors are available to provide consultation and offer sound advice. Supervisor from the Japanese Language Education Team, administrative staff from International Student Division and Special Academic Advisors for International Center are also available to advise and to guide students in close cooperation with the Center.

International Center for Biotechnology

www.icb.osaka-u.ac.jp/index_e.html

While offering education and conducting research in the field of biotechnology from international perspective, the International Center for Biotechnology, together with a newly established Cooperative Research Station in Bangkok, is promoting academic exchange with neighboring countries in an attempt to become a leading biotech center in Asia.

The main area of research is industrial biotechnology rooted in microbial engineering, while centering on the sustainable use of agricultural and forest resources in resource-rich countries such as those in Southeast Asia. Research is underway into the field of cell engineering with the objective of analyzing the cellular functions of bacteria, fungi and plants, and developing and using functions of these cells for management of biological resources with the aim of developing and utilizing the biological resources that exist on our planet.

In the field of international exchange, the center is cooperating with the Department of Biotechnology of the Graduate School of Engineering in order to promote academic exchanges with universities in Southeast Asia. We are also taking part in many large-scale joint research projects related to biotechnology and producing results of international importance.

Moreover, the center, along with the University of Tokyo and others, has conducted for the past years the UNESCO Postgraduate Training Course in the fields of Microbiology and Biotechnology to offer specialized training for young scientists and professors from UNESCO member countries in the Asian region. New innovation is underway to further strengthen the efficacy and attractiveness in establishing the human resource development in the field of biotechnology in the Asian region.

Center for Quantum Science and Technology under Extreme Conditions

www.cqst.osaka-u.ac.jp/

The Center for Quantum Science and Technology under Extreme Conditions is creating extreme conditions by combining advanced science and engineering technologies, and is aimed at exploring properties of materials under such conditions and developing new materials using the results of their exploration. They are promoting the development of new materials science, and are pioneering basic technology for the 21st century.

There are departments for both basic science and applied technologies under extreme conditions. The former is trying to search for new phenomena and to clarify their mechanisms by production of complex extreme conditions of ultra high pressure, ultra-high magnetic fields, very low temperatures and microstructures.

The latter has established ultra-high pressure engineering, very low temperature cryogenic engineering, ultra-high magnetic field engineering and micro-fabrication processing technologies that apply complex extreme technologies at the nanometer level. By using these technologies, they are developing new materials designs and producing next generation high-density devices and new functional materials.

Research Center for Solar Energy Chemistry

www.rcsec.osaka-u.ac.jp/index-e.html

The development of a basic strategic response to our continually dwindling energy resources and especially to those environmental problems which are prevalent on a global scale is perhaps the most important research theme for present day science and technology. The Research Center for Solar Energy Chemistry was established in 2001 under the expressed purpose of advancing the research that will resolve these issues through the use of solar energy. Research here is involved in the fields of Solar Energy Conversion, Environmental Photochemical Engineering, and Energy-and-Environment Catalysts.

The field of Solar Energy Conversion includes research into such areas as photovoltaics and photochemical production of energy resources such as hydrogen that are clean and storable.

The field of Environmental Photochemical Engineering researches the selective conversion of organic materials and new sensors and devices through the development of novel nano-structured photocatalysts and photofunctional materials.

The field of Energy-and-Environment Catalysts is organized by guest professors who are doing research in collaboration with scientists in the other two research fields.

A join-use laboratory for studies on solar energy conversion and photofunctional materials and devices was opened in the Research Center in 2008.

Museum of Osaka University

www.museum.osaka-u.ac.jp

The origins of Osaka University are to be found in "Tekijuku" (founded in 1838) and "Kaitokudo"(founded in 1724). Over this long period a large archive of precious materials (in excess of 2 million artifacts) has been assembled in the university. This archive is catalogued and held by the Museum of Osaka University (MOU) established in April 2002.

MOU is a "comprehensive academic museum" that corresponds variously to a history museum, a natural history museum, a science museum, and an archive. In August 2007, the new exhibition has been started on Machikaneyama museum, which houses numerous priceless specimens surviving from every field of research from many departments and laboratories. Exhibition introduces the intellectual tradition of the university, researchers made world-class discoveries, and the latest frontiers of science in Osaka University. We also hold an annual exhibition every year, which introduces the results of advanced research in Osaka University. MOU is also a driving force behind the University's project of remaining linked in with society, on the basis of the university's motto of "Live Locally, Grow Globally".

In addition, construction of database (Universal Database on The Museum of Osaka University) is in progress, which is recording useful and valuable information on precious materials.

The Museum of Osaka University will play an important role in research and general education at Osaka University. Our ultimate goal is to make the collection accessible, informative and useful to society in Japan and the world.

Institute for Higher Education Research and Practice

www.cep.osaka-u.ac.jp/

Since the start of the 2004 academic year, the Liberal Arts and Sciences Organization, which was previously responsible for planning and managing liberal arts and sciences courses, has been reorganized into the Institute for Higher Education Research and Practice. The Institute consists of the Education Practice Research Department and the Liberal Arts and Sciences Practice Department. 22 members of the academic staff are attached exclusively to the Research Department, while 70 members are attached to both Departments. Compared to the previous committee-based system adopted in the Liberal Arts and Sciences Organization, the new organizational structure has facilitated more effective and flexible methods of working.

The Institute for Higher Education Research and Practice aims to clarify responsibility for the planning and management of liberal arts and sciences courses and increase their effectiveness. At the same time, the Institute is seeking to improve the quality of university education, with a central focus on faculty development, and make an increased contribution to society.

Specifically, on the basis of the All-Staff Participation System, the Institute is taking a fresh look at the design of courses in the liberal arts and sciences, and aims to improve curricula and education methods and strengthen management capacity. At the same time, with the promotion of research interaction and strengthened liaison with practical areas such as the liberal arts and sciences as a foundation, the Institute aims to use the results of research to help it extend its educational activities beyond the campus into society and the world at large.

Center for Advanced Science and Innovation

www.casi.osaka-u.ac.jp/index-e.html

The center is promoting collaborative research projects, advanced research projects supported by government and industrial funded grants, incubation projects, in advanced science and technology. It provides open space for these projects, and also promotes some programs to encourage people who have entrepreneurship and interest in creating future business. The center is aiming to establish the effective partnership with industry in collaboration with the office for University-Industry Collaboration and other institutions.

Health Care Center

www.healthcarecenter.osaka-u.ac.jp/english.html

The Health Care Center including the Student Counseling Center offers consultation services on health, personal troubles and career options for students, as well as medical care (internal medicine, orthopedic and psychiatry). Every year, all students and staff members of Osaka University are encouraged to take regular medical checkups given at the center. The center also provides other special medical checkups obligated by laws and regulations. Furthermore the center also gives after-checkups services to students and staff members when any ailments and abnormalities are discovered. Anyone feeling concern about or discomfort in their physical or

mental condition is encouraged to receive counseling and to learn what is health or bad health, i.e. health education at the center. Privacy is strictly reserved.

The center contributes to campus safety and hygiene through safety and hygiene committee activity. Medical doctors and counselors at the center concurrently commit the clinical study for promotion and management of health as well as prevention of disease. Ongoing research themes covered are cardiac dysfunction, metabolic syndrome, overweight, kidney disease, sleep disorders, and social withdrawals.

The Center for Advanced Medical Engineering and Informatics (MEI center)

www.mei.osaka-u.ac.jp/english/

The Center for Advanced Medical Engineering and Informatics (MEI Center) has been established since 2004 as the first university center after the beginning of a system of independent administrative corporations. The MEI Center aims at enhancing collaboration between researchers in the fields of medicine, engineering, and information science, leading to center core of advanced medical engineering and informatics as interdisciplinary and integrated life sciences. Integrated research projects of the center will exploitthe new era of biological, medical, and clinical sciences, and contribute to improving people's health and welfare and to developing new industries. By maintaining interdisciplinary and international activities, the center will play a role as a flexible system for research and education suitable for the integration of sciences. With the supports from inter-faculty academic staff, the center offers several programs in the interdisciplinary fields of biomedical engineering and informatics in order to develop high-level human resources who will be leading a new consortium for advanced welfare society. The programs include introductory and advanced courses for graduate students, both residential and extramural, the reeducation courses for working people. These programs provide opportunities for students to think about social, medical, clinical and patient demands and technologies with their engineering bases necessary to address the demands. It is the policy of the center that researches, development, and education to address those demands will lead to emergency of new technologies and industries that may contribute to welfare and sustainable society. The center is conducting a global center for excellence program supported by MEXT to promote research and education for the physiome and systems biology for establishing "in silico medicine" as the basis of "predictive medicine."

Center for the Study of Communication-Design

cscd.osaka-u.ac.jp/en/index.html

The Center for the Study of Communication-Design (CSCD) was founded in April 2005. Communication-Design refers to layout of communication networks between experts and non-experts (citizens), between people with different interests and positions. The objectives of CSCD include: (1) training of graduate students in communication capability with citizens, (2) training of science and technology communicators and mediators with skills in dialogue facilitation as well as conflict management, (3) research and development of communication-design especially for consensus building in public affairs, and (4) building of communication networks in collaboration with NPO/NGOs and active citizens.

CSCD consists of five sections (Science & Technology, Human Care in Practice, Community Design, Art and Communication-Design). The background of staff members is various, from philosophy, sociology, psychology and anthropology to art, media design and drama. Thus, in six years, our research activity became interdisciplinary by collaborating with each other.

As for education programs or updated liberal arts, CSCD will offer every Ph.D. course student of Osaka University a set of subjects called communication-design courses, which include introduction to science and technology communication and performing arts workshops, among others. Social alliance is a very important theme for us. There are a couple of training program for students, NPO/NGOs and active citizens, such as those for mediators in medical settings, coordinators of community developments, coordinators of various workshop and art coordinators. In addition, a science shop is organized for interested citizens to make contact with researchers and Ph.D. course students of Osaka University and to have their science-related problems solved.

Center for the Study of Finance and Insurance

www-csfi.sigmath.es.osaka-u.ac.jp/en/

Activities such as finance and insurance expand in mature economies. This is clearly reflected in recent economic trends in developed countries and has become an important issue to prepare for risks in the Japanese economy. Under these circumstances, importance of educating and training of individuals familiar with leading-edge knowledge of finance has much increased. In response to such social situation the Center for the Study of Finance and Insurance was established at Osaka University in April, 2006 jointly by the University's four graduate schools, the Graduate Schools of Engineering Science, Science, Information Science and Technology, and Economics to develop and implement an interdisciplinary, integrated program in social and natural sciences. The Center provides Standard Program and Advanced Program each of which corresponds to the master course level and the doctor course one respectively. Each program includes three courses, Mathematical and Statistical Finance, Financial Economics and Engineering, and Insurance. The Center's objective is to establish, with the cooperation of the professors in the four graduate schools and business world as well, the world's most advanced educational and research site.

Renovation Center of Instruments for Science Education and Technology

www.reno.osaka-u.ac.jp/

Renovation Center of Instruments for Science Education and Technology was founded in April 2007 based on the Osaka University master plan policy, as a result of reorganization of the former Central Workshop which served the university in the last 41 years. The Renovation center consists of four divisions and each division has its own mission; Division I aims at supports for research and education in the university through making instruments for research and education, Division II for instrument reuse promotion, which is based on a concept of active utilization of used equipments among the whole university scale. Division III for promoting shared use of equipments throughout the university, and Division IV for developing newest instruments with the aid of advanced modern science and technology. Each division has subdivided groups; Division I is composed of machine group, glass-blowing group, and chemical analysis group, aiming at technical assistances and apparatus-making supports for research and education. Division II supports maintenance and improvement of experimental equipments by providing reuse database by running its own computer system operation. Division III provides user's workshops for machinery works and chemical physical analysis of material composition, as well as teaching safety and technical skills in machinery to university researchers, staffs and students. Division IV consists of a professor and an assistant professor who aim at creating "the only one" advanced instruments for measurement or very unique analytical tools that have not been produced commercially so far. Division IV also supports the researchers who aim at creating the advanced instruments through the government-supported projects in Osaka University.

Global Collaboration Center

www.glocol.osaka-u.ac.jp/en/

Osaka University's goals for education are comprehensive knowledge and understanding, design prowess and transcultural communicability. Global Collaboration Center (GLOCOL) was established in 2007 for the purpose of developing transcultural communicability. GLOCOL aims to foster sensitivity to both plurality and individuality, and sensibility to value local perspectives. We aspire to do so by effectively and broadly linking research, education and practice of arts and science departments alike at Osaka University that are engaged in tackling global issues.

The name GLOCOL evokes the word "glocal" – and symbolizes a commitment to addressing global issues from a local perspective. This concept is also related to Osaka University's motto: "Live Locally, Grow Globally".

GLOCOL consists of three divisions:

- Division for Advancement of Research
- Division for Educational Development
- Division for Support of Practice

In August 2010, FIELDO (Fieldwork, Internship and Experiential Learning Design Office) will be established. It will work closely with these divisions to maximize the synergy of research, education, and practice activities.

GLOCOL is working on a system for facilitating interdisciplinary cooperation among the university's academic, research, administrative and other units involved in global collaboration projects, as part of its efforts to expand education, research, and practice opportunities in related areas within Osaka University. In addition, GLOCOL will provide a variety of interfaculty and interdisciplinary programs following the broad theme of global cooperation and collaboration.

While serving as a hub for cooperation within Osaka University, GLOCOL also aims to build networks with other academic and research institutes, both inside and outside Japan, as well as with international organizations, public offices, local governments and civil society organizations.

Research Institute for World Languages

www.world-lang.osaka-u.ac.jp/eng/

The Research Institute for World Languages (RIWL) is an organization like no other at any national university in Japan. RIWL's most important mission is to research world languages, focusing not only on the linguistic but also the cultural and social aspects of these languages.

Another important mission of RIWL is to teach and disseminate those languages whose teaching has often been neglected or underestimated at Japanese universities. Currently, RIWL's faculties teach 25 languages (including Japanese) at the School of Foreign Studies and also engage in the research and development of teaching materials for these languages. Worth mentioning is the presence of more than 20 foreign faculty at RIWL, whose primary role is the teaching of 24 languages but whose contribution to the research activities at RIWL is highly expected.

RIWL has 6 Research Divisions representing each region of the world, and to promote research and other activities such as collaboration with other academic institutes and related business circles, RIWL has established 3 Areas - Area for Research, Area for Collaborating with Other Businesses, and Area for Education - in which faculties and researchers are to promote inter-divisional activities.

Center for Japanese Language and Culture

www.cjlc.osaka-u.ac.jp/

The Center for Japanese Language and Culture (CJLC) was first established as the Special Course for Foreign Students at Osaka University of Foreign Studies in 1954. Since then, CJLC has supported our country's policy to accept foreign students by acting as a benchmark institution for more than half a century for the education of Japanese language and culture for Japanese Government (Monbu-kagaku-sho) Scholarship Students.

In addition, CJLC has also contributed to the reinforcement and development of Japanese language and culture learning around the world by establishing partnerships with 20 institutions for Japanese studies overseas.

Meanwhile, CJLC offers three main programs: the Undergraduate Students Program, the Japanese Studies Program and the Maple Program.

The Undergraduate Students Program is a preparatory program for international students who come to Japan on the Monbu-kagaku-sho scholarship. The program is designed to help students develop their base knowledge and advance their skills in the Japanese language required to meet the academic standards of their hosting institutions. The certificate issued to the students upon successful completion of this program is a prerequisite for admission to their future universities in Japan.

The Japanese Studies Program is intended for undergraduate-level Monbu-kagaku-sho scholars specializing in Japanese studies. They are expected not only to improve their skills and proficiency in Japanese, but also to develop the knowledge required for their research in various fields of Japanese studies. This will provide them with an extensive knowledge of Japanese language and culture that will be useful before and after leaving Osaka University. The program also offers various extracurricular activities that help students deepen their understanding of Japanese language, culture and society.

The Maple Program is a one-year program for short-term exchange students at Osaka University designed especially to help students improve their language skills, enhance their knowledge of Japanese culture and society, and to advance them forwards on their respective academic goals. Moreover, the program aims to develop individuals with an in-depth and proficient understanding of Japan from various perspectives, thereby encouraging them to compare and contrast Japanese language and culture with their home countries.

The Center of Environmental Innovation Design for Sustainability

www.sdc.osaka-u.ac.jp/

"Sustainability" In the 21st century, focused as "The Century of the Environment," sustainability has become a key concept in any discussion of economics, science, and technology. Moreover, sustainability science plays a key role in this global challenge seeking to understand the concatenation among global, social, and human systems, and reconstruct their well-balanced relationship to maintain and promote sustainable development.

The Center of Environmental Innovation Design for Sustainability (CEIDS), launched in October 2010 as an institution-wide Osaka University organization, succeeded Sustainability Design Center to further promote sustainability science education and research in the field of environmental innovation. By collaborating with multiple graduate programs and departments, the center provides graduate students from all parts of Osaka University with the interdisciplinary, cross-university Sustainability Science Education Program, which aims to train people in the core knowledge and practical skills of sustainability science as well as the communication and design skills needed to develop a sustainable society. Through its educational programs, the CEIDS functions as a platform for sharing knowledge within the university and supports and promotes research that encourages taking action toward environmental innovation for sustainability. CEIDS also conducts interdisciplinary research with the objective of building a sustainable society. Taking an interdisciplinary approach, the center uses domestic and international networks to conduct research and education on such topics as the model design of sustainable societies (including low-carbon societies and recycling-oriented societies), management and system design for transitioning to low-carbon societies, and creating pluralistic valuation methods for sustainability and the establishment of environmentally sustainable energy systems. In addition to the above, the center conducts research that brings together basic technologies to build sustainable societies with expanded, global social views and to encourage technological and social innovation.

Institute for NanoScience Design

www.insd.osaka-u.ac.jp/

The Institute for NanoScience Design prepares various kinds of education and training programs to hand on the accumulated knowledge of nano-science and nano-engineering to graduate school students and younger scientists who will design and develop new fields for future science and technology. Among these programs are the trans-disciplinary graduate-school minor program, evening course refresher program, short-term international research-training program, and others. They offer a series of lectures, some of them in the form of distance education broadcast live to satellite classrooms located at many places in Japan, and tentatively even overseas in English. In addition to the lecture courses, the students can join in intensive hands-on training programs using modern facilities, which allows them to design, fabricate, measure, and characterize nano-materials and nano-devices. Project-aimed learning and training programs are also offered in collaboration with the Academia-Industry Liaison Consortium. These programs are conducted by the joint groups of lecturers and researchers belonging to six graduate schools and six research institutions and centers related to nano-science and nano-engineering in Osaka University.

nano-program:
www.sigma.es.osaka-u.ac.jp/pub/nano/Homepage(Eng)/index.htm

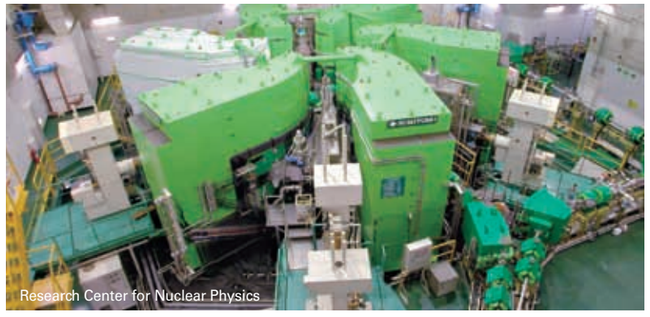
Intellectual Property Center (IPrism)

www.iprism.osaka-u.ac.jp/

The Intellectual Property Center (IPrism) was established on April 1, 2010 as a center for promoting comprehensive intellectual property education and research. Our center is composed of center members and researchers from university and IP practitioners with hands-on experience. IPrism aims to educate a new generation of specialists equipped with a broad intellectual property vision. In addition, members also aim to make social contributions in the intellectual property field. IPrism offers various educational opportunities for students such as a general education in Intellectual property for the undergraduate student. There is also an Intellectual property law program for graduate students. In particular, the Intellectual property law program will help develop leaders in practice or top specialists in intellectual property law. In addition to the lecture, students join an e-learning system using the internet. The learning and practical training provided will improve the student's intellectual property skills.

National Joint-Use Facilities


Cybermedia Center


Research Center for Nuclear Physics


Institute of Laser Engineering

Research Center for Nuclear Physics

www.rcnp.osaka-u.ac.jp/

The Research Center for Nuclear Physics (RCNP) was founded in 1971 as a national research center for nuclear physics. The aim is to promote and perform world-level research in nuclear and particle physics using advanced accelerators and related facilities to answer basic questions such as "Why are quarks permanently confined in a nucleon?", "How are the nuclei formed through the Yukawa force?" and "How our universe is made from quarks, nucleons and nuclei?" RCNP is operating the Ring cyclotron in Suita campus, the Laser-Electron facility at SPring-8, underground facilities at Oto and Kamioka, and has a strong theory group.

The current major activities are: (1) studies of the properties of nuclear forces and mesons in nuclei by using a high resolution proton beam and heavy ion beam from the Ring-Cyclotron, (2) studies of the quark and gluon properties in hadrons by using a high-energy polarized photon beam at SPring-8, and (3) studies of the properties of muons and neutrinos to understand how our universe was created.

Cybermedia Center

www.cmc.osaka-u.ac.jp/e/index.html

The Cybermedia Center (CMC) was founded in April 2000 as Osaka University sought to reorganize and expand its Computation Center (CC) to form a branch of the Information Infrastructure Center. In the expansion, the Education Center for Information Processing and part of the university library were merged into the CMC. At the same time, we organized seven research groups: Informedia Education, Multimedia Language Education, Large-Scale Computational Science, Computer Assisted Science, Cybercommunity, Advanced Network Environment and Applied Information Systems. We continue to provide computers for advanced scientific techniques and media services and to promote education in information processing and the university library by providing digital contents.

We have the world's fastest class of supercomputers and computing servers, and provide a powerful high performance computing environment for university researchers across Japan. It plays the role of the nation's hub in teaching and diffusing advanced information technology. In addition, we assume the responsibility of facilitating the campus infrastructure and promoting its effective use. We also provide facilities for advanced education to our students.

It operates an Information Education system and Computer Assisted Language Learning (CALL) system with approximately 1,400 computers connected by the Osaka Daigaku Information Network System (ODINS). We offer a consistent information education curriculum, covering basic use of e-mail communication and the Internet to advanced computing technology.

Institute of Laser Engineering

www.ile.osaka-u.ac.jp/

The Institute of Laser Engineering (ILE) was founded in 1972 and unified with the Research Center for Superconductor Photonics in 2004.

The objective of the Institute is to develop high energy and high power lasers and to open a new scientific field related to the extremely high energy density state created by the high power lasers.

ILE consists of five research divisions, Power Photonics, Laser Fusion, High Energy-Density Science, Laser Terahertz, and Radiation and Particle Physics. In the Power Photonics Division, new laser materials with high endurance and advanced technologies to control the laser are studied to construct extremely high power and high intensity lasers. The Laser Fusion Division explores feasibility of fast ignition scheme using an ultra-short, intense laser pulse, which is an innovative approach toward high gain laser fusion. The High Energy-Density Science Division covers laboratory astrophysics, planet physics, particle acceleration, and laser nuclear physics that can be realized with the ultra-high intensity laser. The Laser Terahertz Division explores science, technology and application of terahertz electromagnetic wave radiation generated with laser irradiation. The Radiation and Particle Physics Division deals with physics and applications of radiations from laser-produced plasma including energetic particles, x-rays and EUV for lithography.

These researches are based upon varieties of lasers which are the Gekko XII high power laser (10 kJ in 1 ns), the ultra-high intensity LFEX laser (10 kJ in 10 ps) and the high repetition rate YAG laster (5 kW > 10 kHz). These laser facilities are open not only for domestic users, but also for international users.

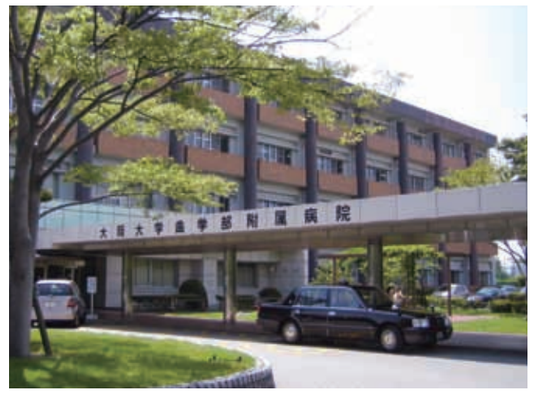
Osaka University Hospital

www.hosp.med.osaka-u.ac.jp/

The origin of Osaka University Hospital was established in the Daifuku-ji Temple of Osaka in 1869. Since then, the hospital continued to grow up after several steps of reorganization. Most importantly, it was designated as a hospital of the newly established Osaka Imperial University School of Medicine in 1931. At that time, the hospital was located in Nakanoshima area, downtown Osaka. Very recently, in 1993, it was relocated in the present site in Suita City. In this huge new ground of the suburbs of Osaka City, it continues to develop as a pioneer of the most advanced medicine, including organ transplantation and tissue engineering. It is also known as a leading hospital for emergency medicine and for medical quality management in Japan.

Osaka University Dental Hospital

hospital.dent.osaka-u.ac.jp/index-e.html



Since opening in 1953, Osaka University Dental Hospital has strived to meet the demands of our community by promoting oral health science education and research as well as providing quality care through the clinical practice to contribute to the development of oral health care. Osaka university Dental Hospital consists of three highly advanced clinics: Division of Tooth and Supporting Tissue Diseases, Division of Prosthodontics and Orthodontics, and Division of Oral and Maxillofacial Diseases. The hospital boasts central clinical facilities, a pharmacy department, a nursing ward, a joint-use clinical facility, and an administrative department. Recently, a new building with surgery rooms, hospital ward with 40 beds, and educational rooms for pregraduate students and post-graduate dentists was completed, while most of the clinical rooms in the other buildings have been remodeled. In addition, the hospital is fully equipped with advanced clinical equipment for safe and advanced oral health care, providing an improved educational environment for pre-graduate students and postgraduate dentists.

Kaitokudo for the 21st Century

21c-kaitokudo.osaka-u.ac.jp/

In 1724, a gakumonsho [a place for study] called Kaitokudo was established in the city of Osaka. In those days such gakumonsho were, in general, founded by influential samurai or fiefdoms for the purpose of educating samurai. Kaitokudo, however, was founded and financed by five powerful merchants for the benefit of members of the merchant class. Moreover, Kaitokudo was not merely a place for educating merchants; it boasted the highest caliber research achievements of that age. Present-day Osaka University traces its spiritual origins back to Kaitokudo and to Tekijuku, a gakumonsho founded by Ogata Koan in 1838.

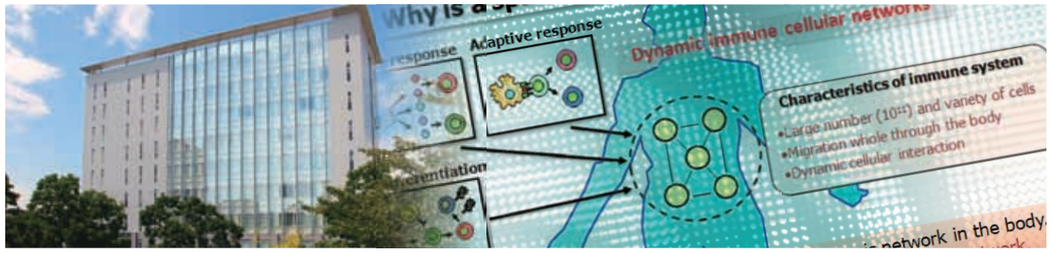
To realize in our time the ideals that Kaitokudo aspired to, Osaka University launched Kaitokudo for the 21st Century in April 2008. Kaitokudo for the 21st Century not only informs Osaka people as to the contributions Osaka University is making to society, but also offers cultural programs to the local community. It also plays the role of coordinator, listening to the local community's opinions and requests and reflecting them in the university's activities.

Its main office is in the "I-gokan[(1)]" on Toyonaka Campus. The building contains a communication gallery displaying Osaka University's intellectual activities as well as a multi-purpose studio for holding various events.

(1) The name will change to "Osaka University Hall" from April 1, 2011.

WPI Immunology Frontier Research Center

www.ifrec.osaka-u.ac.jp/index-e.php



WPI Immunology Frontier Research Center (IFReC) was launched in 2007 as part of the World Premier International Research Center Program initiated by the Ministry of Education, Culture, Sports, Science and Technology.

Immunology has been evolving through the incorporation of molecular and cellular biological techniques. As a result, a number of immune cells and cytokines have been discovered, and signaling pathways and diverse mechanisms have been identified. However, at present, we still cannot draw the whole picture of immunological responses, and accordingly, we are not able to predict the outcome of immune responses when a certain pathogen invades the body, or even treat immune diseases.

In order to address these limitations, we need to develop new research projects designed to clarify immune responses in a spatiotemporal manner in the body.

The goal of IFReC is to visualize the behavior, activation status, and interaction of immune cells in vivo, through the fusion of immunology, imaging technology, and Bioinformatics, and understand the immune system comprehensively. This approach is expected to be the first step in controlling immune responses. Furthermore, it will lead to vaccine development based on controlling the dynamics of immune cells and establish new immunotherapy treatments for immune diseases.

IFReC is committed to the realization of innovative accomplishments in immunology through interdisciplinary collaboration between immunology and different field researchers.

Osaka University Nakanoshima Center

www.onc.osaka-u.ac.jp/

Osaka University was founded with close ties to the economy and society of the Osaka area and has since actively interacted and cooperated with local industry and the community-at-large. The Osaka University Nakanoshima Center (ONC), serving as a center for social contribution, opened in downtown Osaka in April 2004. The ONC communicates university achievements to society while assimilating the wisdom and culture of the local community through university-society exchanges, thereby leading to innovative intellectual products.

Thanks to its downtown location, ONC conducts consultations for companies in the areas of economy, business, medicine, and technology. It also offers lectures to the public on the humanities, culture, and science, as well as provides highly specialized vocational training courses.

With a capacity of 200, the Keizou Saji Memorial Hall on the top floor provides facilities for conferences, concerts, and other like events.

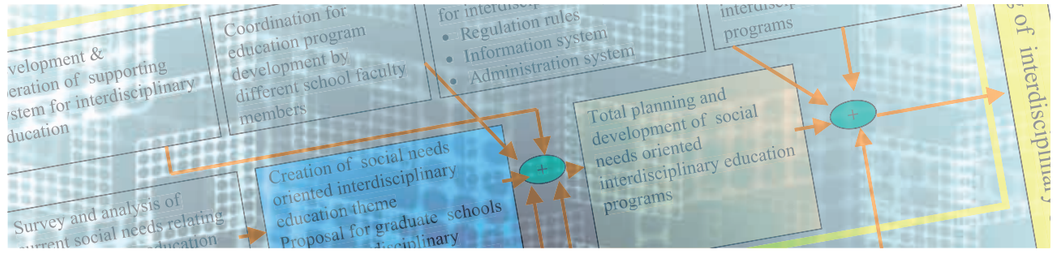
Reservations are recommended for the "Communication Salon" on the 9th floor, where meals and drinks are served in the evening.

Please feel free to make use of Cafeteria Scholar on the 2nd floor not only for lunch, but also for stand-up buffet parties.

Finally, the ONC also contains the Campus Innovation Center established by the Ministry of Education, Culture, sports, Science and Technology and managed by Osaka University, offering various "Satellite Campuses" for working people.

Center for Interdisciplinary Research and Education

www.osaka-u.ac.jp/facilities/gakusai/



The importance of the interdisciplinary education has been recognized widely. To strongly promote and expand interdisciplinary education, Osaka University established the Center for Interdisciplinary Research and Education on April 1st, 2009 by adding faculty and staff members to the Liaison Office for Interdisciplinary Research and Education established on April 1st, 2006.

To respond quickly to changes in science, technology and human society, Osaka University has been offering several interdisciplinary education programs through organizations for the programs since 2004.

The Center for Interdisciplinary Research and Education has two major missions. One is a planning of interdisciplinary education programs. The other is a supporting for smooth operation of interdisciplinary education programs.

As for the planning mission, new programs of interdisciplinary education are developed through research on demands and needs of students as well as those in research societies, companies and human societies.

As for the supporting mission, specialists of the student affairs give advices and assistances relating complicated student affairs such as enrollment procedures, and records of study and certifications of study completion, to the operating organizations of interdisciplinary education programs.
In addition, necessary revisions of the Osaka University regulation rules are planned.

In the academic year 2010~2011, 27 interdisciplinary education programs are being offered to graduate students .

Overseas Centers

Osaka University Overseas Centers for Education and Research in San Francisco (USA), Groningen (The Netherlands), Bangkok (Thailand) and Shanghai (China)

Osaka University aims to become one of the world's most advanced institutions in education and research through internationalization. Our goal is to foster internationally-minded students and researchers with high communication skills that can one day serve as leaders to the international community. To fulfill our goal and our responsibility as an active member amongst global universities, we have established overseas centers for education and research in four locations: San Francisco (USA), Groningen (The Netherlands), Bangkok (Thailand), and Shanghai (China).

The central aim of these overseas centers is to enhance international collaboration in all fields of research and to facilitate student exchange at both the undergraduate and graduate levels via academic exchange agreements with distinguished universities and institutions worldwide. With the opportunity for closer exchange among local universities and their surrounding communities, we hope to share the mutual benefits of research achievements as well as gain insight into new methods of education. The centers provide vital information for academics and research, thereby answering to the present internal and external demands of students and researchers.

The functions of the overseas centers are:

1. Promoting Osaka University's cutting-edge research in fields such as biotechnology, IT, robotics and nanotechnology by conducting international seminars and symposiums
2. Implementing the use of innovative multimedia tools to conduct a variety of lectures through e-learning
3. Supporting short-term study abroad programs
4. Providing information about studying at Osaka University
5. Assisting university-industry cooperation
6. Building alumni networks

San Francisco Center for Education and Research (USA)

www.osaka-u-sf.org/

The San Francisco Center supports collaborative research projects through institutional, departmental and corporate partnerships while encouraging the sharing of important international research work by hosting symposiums, conferences and seminars.

The SF Center also provides Osaka Universty students with innovative multimedia tools to host guest lecturers from a variety of fields at its distance learning studio, as well as information and guidance to North American students wishing to study at Osaka University. In addition, it helps facilitate various short-term programs such as an intensive English language programs specifically catered towards the academic disciplines of students affiliated to the following departments: the Graduate School of Engineering, the Graduate School of Engineering Science, the School of Science (for undergraduate students) and the Graduate School of Dentistry.

Continually cultivating career-oriented programs, the SF Center works to strengthen such programs by helping students obtain hands-on internships at both American and Japanese corporations and by hosting of guest lecturers from a variety of fields through its innovative distance learning studio.

The SF Center supports more than 400 Osaka University alumni and former exchange students through its extensive outreach network, holding alumni activities and building links with regional industries and communities across North America.

Groningen Center for Education and Research, Osaka University (The Netherlands)

www.osaka-u-groningen.org/

The Osaka University Groningen Center was established at the Zernike Campus of the University of Groningen, The Netherlands. The purpose of the Groningen Center is to support the mobility of students and researchers among Osaka University and academic institutions in European countries.

The Center plays an important role as a gateway to Europe to extend the educational and research activities of Osaka University.

The Groningen Center assists exchange programs such as the Erasmus Mundus (EM) Euro-Culture Program and the ICI ECP (Industrialized Countries Instrument Education Cooperation Program) between Osaka University and EU universities, as well as Japanese government-EU collaboration programs. In planning those programs, the University of Groningen is contributing largely as Osaka University's closest partner university in Europe. In addition, the Center supports a short-term undergraduate summer program for Osaka University students held at the University of Groningen.

Bangkok Center for Education and Research (Thailand)

www.osaka-u-bangkok.org/

The Bangkok Center was launched with the aim to establish active relationships in education and research with Thai universities, in particular with six Thai universities and an institute via academic exchange agreements with Osaka University. One of the missions of the center is to recruit outstanding students from Thailand and neighboring countries to Osaka University, by actively participating in "Japan Study Fairs" held in the region. Moreover, the center assists in the operation of Japanese programs for Thai students as well as an English program for Osaka University's students in coordination with a Thai Universitiy.

The second mission is to support on-site research activities in Thailand, carried out by individual faculties, institutes and centers, such as collaborative research on emerging and re-emerging infectious diseases and bioresource development through the support of the Japanese and Thai governments.

The third mission is to strengthen social contributions. The center also holds annually public lecture showcasing our research and enlightening the Thai community about infectious diseases. Furthermore the center contributes through serving as a center for the Thai and Japanese alumni of Osaka University in Thailand.

Shanghai Center for Education and Research (China)

www.shanghai-center.osaka-u.ac.jp/

In February 2010, the Shanghai Center for Education and Research opened and commenced its operations.

The main services of the Shanghai Center consist of the following: (1) facilitating the admissions of exceptionally bright students from China while providing support to our own students to study in China, (2) support for research exchange with China's universities and other institutions, (3) public relations and intelligence gathering to improve our university's academic presence in education and research in China, (4) support for Osaka University alumni activities within China.

Osaka University has been actively expanding the interaction of its researchers and students with Chinese universities and other research institutions, and we look forward to propelling international exchange with China to even greater heights with the university's utilization of the Shanghai Center as it commences its full operations.

Academic Programs and Admission

Degree Programs

Undergraduate Program (Bachelor's Degree Program)

Each of the eleven Schools offers an undergraduate program.

Students enrolled in one of these programs will study for a period of four years. Students enrolled in the Faculty of Medicine's Medical School, School of Pharmaceutical Sciences' Department of Pharmaceutical Sciences, and the School of Dentistry will study for a period of six years. All undergraduate students are required to undergo the liberal education program (a program that covers a wide range of specialty and liberal courses) for their first three semesters (one and a half years) after entering the university. The liberal education program is offered at the Toyonaka Campus.

Application Conditions for Unsponsored International Students (except for degree programs in English):

International applicants (students from out side of Japan) must meet one of some criteria by March 31st of their year of enrollment.

For example,

- Those who have completed a standard 12-year school education curriculum of a country other than Japan.
- Those who are at least 18 years of age and who have passed an examination in a county other than Japan which certifies that they have scholastic ability equivalent to a person who has completed a standard 12-year school education curriculum in the said country.

＊In principle, international applicants reguired to take the TOEFL and the "Examination for Japanese University Admission for International Students" (EJU) conducted by the Japan Student Services Organization (JASSO), having taken the designated subjects in the determined period of time, and having scored at least the minimum amount of points determined by the faculty or school one is applying to. The Faculty of Medicine's School of Allied Health Sciences, the School of Dentistry and the School of Foreign Studies do not require the TOEFL.

＊The most current details regarding application requirements and entrance methods can be confirmed at Osaka University's home page. It is recommended that one contact the Admission Division before applying if one has further questions.

(www.osaka-u.ac.jp/ja/admissions/faculty/expense/index2.html (Japanese))
(www.osaka-u.ac.jp/en/admissions/faculty/expense/index2.html (English))

FOUR TYPES of INTERNATIONAL STUDENTS

Japanese Government Scholarship Students (Monbukagakusho Scholarship)

Japanese Government Scholarship Students are able to enter Japanese universities with an exemption of the entrance examination fee, matriculation fee and tuition fees. Furthermore, they are granted a scholarship stipend every month. Japanese Government Scholarship Students are able to enroll in Osaka University as "Undergraduate Students", "Research Students" (graduate students), "Japanese Studies Students" or "Teacher-Training Students"

Before coming to Japan, there are two ways of applying to this program: "Embassy Recommendation" and "University Recommendation". For further detailed information including application conditions and procedures, please contact the Japanese Embassy located in your home country for "Embassy Recommendation", or the relevant office of the specific school/graduate school, or the faculty member you would like to have as an academic supervisor for "University Recommendation".

Foreign Government Sponsored Students

The Japanese Government is currently accepting students who are sponsored by their home countries of Malaysia, Thailand, Singapore, the United Arab Emirates or Saudi Arabia. For further detailed information including application conditions and procedures, please contact the appropriate government agency of these countries.

Unsponsored International Students (Privately Financed International Students)

International students not receiving a scholarship from the Japanese Government or from the government of their own countries are categorized as "Unsponsored International Students".

Short-Term Exchange Students (from partner universities [1])

Osaka University has formed student exchange agreements with universities abroad, accepting non-degree exchange students from these universities for one year or less, granting entrance examination fee, matriculation fee and tuition fee waivers. During the exchange period, short-term exchange students shall continue their enrollment at their home university. Depending upon their home university, credits earned at Osaka University can be counted as required credits for graduation. For further detailed information including application conditions and procedures, please contact the office in charge of international student exchange at the university you are currently enrolled at.

1) The universities marked with a "＊" among those listed on p.110-118 fit the universities described here.

Graduate Program (Master's Degree and Doctoral Degree Program)

Each of the sixteen graduate schools at Osaka University implement graduate programs. The graduate programs are generally composed of two courses: the Master's Course (first two years) and the Doctoral Program (a continuation for those who have completed the Master's Course). Students who have completed the Master's Course are granted a master's degree; students who have completed the Doctoral Program will receive a doctoral degree.

The Doctoral Program generally takes place after the Master's Course for a length of three years. The Doctoral Program for the Graduate School of Medicine (except for the Division of Health Sciences) and the Graduate School of Dentistry are a period of four years. The Graduate School of Frontier Biosciences has a 5-year intensive doctoral program. The Law School is three years, which upon completion students are granted a Juris Doctor's Degree.

Application Conditions for Unsponsored International Students:

For the most recent details regarding the entrance selection method into the university, refer to each respective graduate school's home page.

Master Courses, Doctoral Program of the Graduate School of Frontier Biosciences and Law School :

The following condition must be fulfilled.

- Those that have completed 16 years of schooling, graduated from a university or those recognized and approved as having an academic ability equivalent to the above by the Minister of Education, Culture, Sports, Science and Technology or the graduate school to which one is applying.

Doctoral Programs:

The following condition must be fulfilled.

- Those who have obtained a master's degree or professional degree, or those recognized and approved as having an academic ability equivalent to the above by the Minister of Education, Culture, Sports, Science and Technology or the graduate school in which one is applying to.

Doctoral Programs (Graduate School of Medicine, Graduate School of Dentistry):

Either of the following conditions must be fulfilled.

(1) Those that have completed 18 years of schooling and have graduated from a university's school of medicine, school of dentistry, or school of veterinary medicine.

(2) Those recognized and approved as having an academic ability equivalent to (1) by the Minister of Education, Culture, Sports, Science and Technology or the graduate school in which one is applying to.

NECESSARY LANGUAGE ABILITY

Degree courses are regularly held in Japanese. International students must have acquired the appropriate required level of Japanese ability in order to keep up with their classes by the time of enrollment.

Some graduate schools or some of the short-term exchange programs are available in English. (See P.102,103)

For those not seeking a degree and do not intend on taking classes but wish to conduct specific research activities, there are many fields (especially in the field of science) where research is conducted in English and English speaking researchers are accepted as visiting scholars or graduate school students. For further information, please confirm with the faculty member of Osaka University you would like to have as a co-researcher or as an academic supervisor.

Supplementary Japanese courses are offered for international students and visiting scholars at Osaka University, but there are no Japanese pre-training courses for unsponsored international students.

For information on local Japanese language schools, please contact the Japanese Embassy in your home country.

Degree Programs in English

New Programs

Human Sciences All-English Undergraduate Degree Program (BA) will offer two majors: Global Citizenship and Contemporary Japan. Students will take foundation courses in both in the first 3 semesters and begin concentrated study for one major from the fourth semester. All instruction will be in English, but students will also have Japanese language education alongside the main studies component. The program will be characterized by an interdisciplinary human sciences approach and an emphasis on practical fieldwork. (To commence in October 2011)
(g30.hus.osaka-u.ac.jp/)

Chemistry-Biology Combined Major Program (BS/BE) will offer students a new opportunity to learn two fundamental and interacting fields and prepare them to the challenges of rapidly advancing scientific frontiers (Started in Oct. 2010).
(cmp.sci.osaka-u.ac.jp)

Special Integrated Science Course (MS/Ph.D.) is a graduate program for students who have completed the Chemistry-Biology Combined Major Program at Osaka University or who are graduate students in biology, chemistry, and macromolecular science. The program is designed to train the next generation of cutting-edge scientists (Started in Oct. 2010).
(www.chem.sci.osaka-u.ac.jp/sisc/index.html)

International Physics Course (MS/Ph.D.) is a graduate course for students who have completed an undergraduate major in physics or the equivalent. The education is designed so that a student can work as an active member of international collaborations in theory or experiment, for example, with large scale facilities. (Started in Oct. 2010).
(www.rcnp.osaka-u.ac.jp/~ipc/)

Ongoing Graduate Degree Programs

Frontier Biotechnology is a five-year program for master's and doctor's degrees which aims to expose young scientists to state-of-the-art research and in-depth knowledge of advanced biology, chemistry and physics to harness the potential of biotechnology.
This program is also for students having completed the Chemistry-Biology Combined Major Program.
(www.mls.eng.osaka-u.ac.jp/FB_inter_prog/FB_inter_prog.html)

Engineering Science promotes trans- and multidisciplinary topmost research and education as "Engineering Science 21st Century" Program among emerging specialized areas of science and technology such as materials engineering science, nanotechnology, mechanical science and bioengineering, and system innovation including opto-electronics, system science and applied information, robotics, and mathematical science.
(www.es.osaka-u.ac.jp/eng/gradadm/index.html)

Naval Architecture and Ocean Engineering educates a new generation of young scientists with fundamental knowledge and develops advanced research skills to realize a safer and more efficient maritime transport and a cleaner ocean environment.
(www.naoe.eng.osaka-u.ac.jp/eng/)

Quantum Engineering Design provides students with up-to-date and world-class research techniques to advance quantum engineering design in response to global, technological and environmental challenges.
The core divisions are "mathematical methods' frontier," "elucidation of material function formation mechanisms" and "realization of new generation functional materials."
(www.dyn.ap.eng.osaka-u.ac.jp/QEDC/)

Non-Degree Programs

Programs for Short-Term Exchange Students

There is a wide variety of one-year (or less) short-term programs prepared for international students from the universities abroad that have student exchange agreements with Osaka University (so called as "short-term exchange students").

Within these programs, there are a number of classes that Japanese students may also participate in. Through these classes, close inter exchange with Japanese students can be acquired.

For applications and inquiries on these programs, please contact the appropriate office in charge of international student exchange at the university you are currently enrolled in.

OUSSEP
(Osaka University Short-term Student Exchange Program)

OUSSEP has been designed to give students from overseas universities who have not studied Japanese an opportunity to earn transferable credits at Osaka University under the close coordination of the Center for International Education and Exchange. 3rd and 4th year undergraduate students of their home university can study a variety of subjects in fields such as the medical sciences, natural sciences, social sciences, arts and foreign studies in English for 1 year (2 semesters) (Full OUSSEP) or half a year (1 semester) (Half-year OUSSEP), from April or October. In addition to this, independent research may also be conducted. Every year, applications must be submitted to Osaka University through the applicant's home university by the beginning of November (for those starting in April) or by late March (for those starting in October).
(ex.isc.osaka-u.ac.jp/oussep/)

Maple

Maple is a special Japanese Culture-Language program designed to raise talented people capable of understanding Japan in a diverse way from a comparative and contrastive viewpoint. Participating students will be able to select Japanese courses from elementary-intermediate to advanced levels based on the proficiency of their Japanese skills. Students will also take comparative research classes conducted in English, comparing and contrasting the language and cultural differences between their home country and Japan, as well as take specialized Japanese culture and language seminars focused on understanding intercultural differences with Japanese students. In addition to this, independent research may also be conducted. The program is held from October to August of the following year (2 semesters), and mainly accepts 3rd and 4th year undergraduate students from their currently enrolled university.
(www.cjlc.osaka-u.ac.jp/program/m/)

FrontierLab@OsakaU

The FrontierLab@OsakaU program is designed to nurture originality in students by offering potential research directions in a wide range of fields and emphasizing hands-on laboratory experience. Each participant will be assigned to a particular research group in one of Osaka University's internationally renowned science and technology fields. Thematic studies will be conducted through experiments, peer consulting, group work and interactive discussions under the closesupervision of the faculty. The program will be conducted in English or Japanese.

The program focuses on foreign undergraduate students who have completed their 1st and 2nd year of study at their enrolled university.

The following two plans are offered:

Plan 1:
- i. Applicable for both undergraduate and graduate students
- ii. Fixed period: 1 semester (15 weeks) or 2 semesters
- iii. Participants will conduct credited research supervised by faculty members, and have the option to take other credited courses (including Japanese Language subjects)

Plan 2:
- i. Applicable for graduate students only
- ii. Flexible period (3 to 12 months)
- iii. Participants will conduct research supervised by faculty members, but are unable to participate in coursework that will grant credits.
- iv. Research work will be evaluated by an academic supervisor and reported to the participant's home university.

Students from universities abroad that do not have student exchange agreements with Osaka University are also eligible to participate in the program if the tuition fee to Osaka University is paid.
(www.osaka-u.ac.jp/jp/international/iab/e/FrontierLab.html)

Regular Short-term Exchange Programs

This program is intended for undergraduate/graduate international students to study for less than one year, selecting and attending classes that are originally intended for Japanese students. Graduate students may also focus on research under the guidance of a faculty member for less than one year. Classes eligible for attending are determined by each school/graduate school.

Research Students

The research student system enables students to enter schools or graduate schools to research a specific subject/field as "research students", with the permission of the schools or graduate schools concerned. However, students enrolled are unable to receive a degree or credits. In addition to schools and graduate schools, research institutes, joint-use facilities, and national joint-use facilities also accept research students.

For further information, please contact the relevant school/facility.

Campus Life

The Best Facilities for the Best Students

Osaka University's three campuses, Suita, Toyonaka, and Minoh, are connected by monorail and a free shuttle bus service. Each campus has facilities that are needed in daily life such as cafeterias, post offices, ATMs, bookstores, stationary stores, barbershops, and travel centers. As a result, students can enjoy their campus life while undertaking in their studies.

Each campus has a health care center where consultation services on health and medical care (internal medicine) is offered. Every year, regular medical checkups for students and medical consultations are given at the center.

Enrich your School Life with Sports, Clubs, and Cultural Activities

Osaka University offers a vast array of sports facilities, such as track fields, gymnasiums, swimming pools and more. Osaka University has 58 sports groups, which range from traditional martial arts to modern outdoor sports. Cultural activities at Osaka University number 68 groups.

Students are able to travel beyond their fields of research and deepen their friendships through these activities. Osaka University emphasizes activities that nurture human relationships through several competitions and activities, and supports students through the maintenance of facilities and equipment.

Support and Other Information

Fees and Financial Support

Tuition Fees*

Category	Entrance Examination Fee	Enrollment Fee	Tuition Fee
Undergraduate Student	17,000 yen	282,000 yen	535,800 yen/year
Graduate Student	30,000 yen	282,000 yen	535,800 yen/year
Law School Student	30,000 yen	282,000 yen	804,000 yen/year
Research Student	9,800 yen	84,600 yen	28,900 yen/month
Auditor / Special Student	9,800 yen	28,200 yen	14,400 yen/credit

*As of October 1, 2010. These fees may be subject to change.

Tuition Fee Exemption / Reduction

Unsponsored international students (full-time private students in the undergraduate/graduate courses) who have difficulty in paying the tuition fee and have an outstanding academic record may apply for a tuition fee exemption at the Student Center at each campus.

The ratio of tuition deduction is either full reduction or half reduction.

The number of applicants accepted is limited.

Scholarships

Offered by the Japan Student Services Organization (JASSO), local governments and private scholarship organizations, there are scholarships provided to unsponsored international students with outstanding academic records who have financial difficulty,The amount of most scholarships varies from 50,000 to 100,000 yen per month.

Currently, about one half of the unsponsored international students at Osaka University are receiving some form of financial aid.The applications for many scholarships are processed through the administrative office at the school/graduate school where students are enrolled.

Information on scholarships is also available through JASSO(www.jasso.go.jp/study_j/scholarships_e.html)

Most of these programs may be applied for after entering the university.

Please note that the scholarships listed below for short-term exchange students require applicants to apply through their currently enrolled university that have student exchange agreements with Osaka University before coming to Japan.

- Osaka University Scholarship for Exchange Study
- JASSO International Student Scholarship for Short-term Study in Japan Cost of Living

Cost of Living

Cost of Food	30,000 yen—40,000 yen
Living Cost, Utilities, Travel Expenses	50,000 yen—60,000 yen
Study Expenses	6,000 yen—12,000 yen
Entertainment, Clothes	21,000 yen—22,000 yen
Other Miscellaneous Expenses	14,000 yen—23,000 yen
Total (Per Month)	**121,000 yen—157,000 yen**

Health Insurance

International students staying in Japan are required to join the insurance program called Kokumin Kenko Hoken (National Health Insurance). By paying the premiums, the insurance covers 70% of all fees for medical care and hospitalization.

Accommodation

Dormitory for International Students (Osaka University Dormitory, Public Dormitory)

The number of residences being managed by Osaka University and public organizations is limited.The rent for these facilities is comparatively cheaper than private housing.
(www.osaka-u.ac.jp/en/guide/international/residence.html)

Osaka University Residence Halls

Residence	Suita International Student Dormitory	Toyonaka Campus International House			Niina Dormitory for Foreign Students	Minoh Dormitory for Foreign Students	Minoh International Student Dormitory
Room Type	Single Male	Family	Couple	Single	Single	Single	Single
No. of units	72	13	17	70	12	117	40
Monthly Rent	5,900 yen	14,200 yen	11,900 yen	5,900 yen	5,900 yen	5,900 yen	4,700 yen

Publicly Managed Residential Halls

Room Type	Single
Monthly Rent	20,000 yen—30,000 yen

Private Housing

Nearly 70% of the international students live in private housing near Osaka University. In many cases, international students find housing with the assistance of their friends and acquaintances.The Osaka University CO-OP also runs a housing introduction service for a fee.

The Center for International Education and Exchange and the advising room for international students of each school/ graduate school also offer housing advice. When renting private housing, applicants are usually required to pay a lump sum comprising of a rental deposit, security deposit, and broker's commission (half to one month's rent) upon concluding a lease agreement. Around half of the rental deposit will be refunded upon vacating the apartment. Please note that private apartments are usually unfurnished.

Apartments

Type	Deposit	Rent Per Month (Excluding Utilities)
Studio (One Room)	100,000 yen – 450,000 yen	30,000 yen – 70,000 yen
Apartment (Two Rooms)	150,000 yen – 500,000 yen	50,000 yen – 120,000 yen

Support and Exchange Activities

At Osaka University, we are endeavoring to equip and sustain systems designed to help the study and research of international students and visiting scholars progress smoothly.

Counseling, Advice

With the cooperation of counselors and special academic advisors, the Center for International Education and Exchange provides international students with various types of advisory services related to living in Japan and studying at Osaka University.

Students may also use advising rooms for international students that are provided independently by some of the schools/graduate schools (separate from the service above).

Japanese Language and Culture Programs

The following programs are offered:

- Japanese language courses for international students (Provided by the Center for International Education and Exchange)
- Japanese program for specialized fields, implemented by some of the scientific and engineering schools/ graduate schools.
- Daily life Japanese program for visiting scholars and also for the spouses/children of aged 18 or over of international students and researchers or employees (Provided by the Center for International Education and Exchange)
- High-level Japanese learning Program designed for undergraduate Japanese Government Scholarship Students, specializing in Japanese Studies. (Provided by the Center for Japanese Language and Culture)
- Japanese culture-language program for short-term exchange students (Maple Program) (Provided by the Center for Japanese Language and Culture)
- Japanese preliminary language programs for Japanese Government Scholarship Students and KOSMOS (Korean Students of Science Major at Osaka University with Special Scholarship) students (Provided by the Center for International Education and Exchange and the Center for Japanese Language and Culture)

Exchange Activities

International students can broaden friendship and communication with both international and Japanese students, as well as the faculty and staff and local residents by actively participating in a variety of the following support and exchange programs, mainly organized by the Center for International Education and Exchange.

- Cultural exchange event for international students and local residents
- Home visit (a chance to participate in the Japanese daily life)
- International understanding programs with local schools
- Inter-exchange between international students and Japanese students (parties, campus tours, help with the Japanese language, and school and local events and festivals), provided by the international students association and student volunteer groups

Tutor Program

One-on-one peer tutors are available to undergraduate students for their first two years in Japan.The tutors are mainly graduate students, majoring in courses relating to the major of the respective international student, and help the international students improve their Japanese skills and provide guidance for matters outside classes.

Useful Links	
Osaka University	www.osaka-u.ac.jp/en/
Graduate & undergraduate schools & facilities	www.osaka-u.ac.jp/en/academics
Admissions (for unsponsored international students-undergraduate level)	www.osaka-u.ac.jp/en/admissions/faculty/expense/index2.html
for Prospective Students	www.osaka-u.ac.jp/en/for-examinee
General Information of Financial Aid	www.osaka-u.ac.jp/en/guide/student/tuition
Overseas Centers for Education and Research (San Francisco, Groningen, Bangkok and Shnaghai)	www.osaka-u.ac.jp/en/guide/international/branch.html
Partner Universities	www.osaka-u.ac.jp/en/guide/international/exchange

Other Useful Links	
JASSO(Japan Student Services Organization) Information on Study in Japan, Japan Education Fair etc	www.jasso.go.jp/index_e.html
STUDY IN JAPAN Comprehensive guide for prospective students, foreign students in Japan, for former foreign students	www.studyjapan.go.jp/en/index.html
Japanese Embassies Information on Japan pre-arrival scholarships offerd by the Japanese Government, please refer to the Japanese Embassy in your country.	www.mofa.go.jp/about/emb_cons/over/index.html

Support Office for International Students and Scholars

The Support Office offers various types of assistance for international students, scholars and their families, such as assistance in the procedures for their CESR (Certificate of Eligibility for Status of Residence), the search for accommodations, and with additional procedures before and after their arrival in Japan. The Support Office also provides information through monthly orientations for newcomers, handbooks/guidebooks, a homepage, and the community web site Global Campus Net, Osaka (GCN-Osaka).

The primary goal of the Support Office is to help make the life of our international students and scholars easier and more comfortable, so that they can fully concentrate on their academic activities throughout the duration of their stay in Japan.

For more information, please refer to the following web sites.
Support Office: www.rcnp.osaka-u.ac.jp/osaka-ip/supportoffice/
GCN-Osaka: www.gcn-osaka.jp/

Internationalization of Osaka University

TSUJI Kiichiro

Trustee and Vice-President (International Affairs)

In December of 2005, "Osaka University's Global Commitment and Strategy" was formulated and officially announced, within which Osaka University's intention to become a "university open to the world" was expressed. In the following, some of the university's internationalization strategies will be described.

First, the university has established in its headquarters the International Affairs Board, the Supervisory Office for Overseas Centers for Education and Research, the Administration Bureau's Department of International Affairs and the Office for International Planning and Programs. The last one is an organization that undertakes research and planning with a full-time faculty, some researchers and staff. It has produced many significant achievements in the past few years. Osaka University now operates four overseas centers, namely, San Francisco, Groningen in the Netherlands, Bangkok and Shanghai Centers. These centers are coordinated under the Supervisory Office for Overseas Centers for Education and Research. Each center is staffed with a full-time faculty member and administrator, a special feature that differs them from many overseas offices of other universities.

Second, a number of short-term educational programs for international students has been created, in order to promote student exchange. The regular student exchange program accepts students to the schools/graduate schools of Osaka University where they attend regular classes delivered by Japanese language. Specially designed programs are OUSSEP (the Osaka University Short-term Student Exchange Program), Maple, and the FrontierLab@OsakaU. OUSSEP is a program that does not require knowledge in the Japanese language, Maple is a Japanese culture-language study program, and FrontierLab@OsakaU is a research-focused program for science and engineering students. Also, increased number of programs that dispatch Osaka University students abroad are becoming available each year.

Third, Osaka University is committed to "internal internationalization". In other words, we are making more efforts to upgrade services for international students and scholars at Osaka University. The Support Office for International Students and Scholars has been established for this purpose and it conducts support in visa applications and provides referral services for on- and off-campus accommodations, as well as provides information concerning life in Osaka upon arrival in Japan. A website called Global Campus Net provides international students and scholars with information on on-campus activities and neighboring communities. Securing accommodations for international students and scholars remains as a problem to be addressed, and we are trying to improve the situation by working with private sectors.

In 2009, Osaka University was selected as one of the universities of the Global 30 project. The "Global 30" was designed by MEXT to support universities that carry a strong desire to attain internationalization. One undergraduate degree program that delivers lectures in English and two other graduate programs were launched in Oct. 2010.

The followings are some of our future plans:

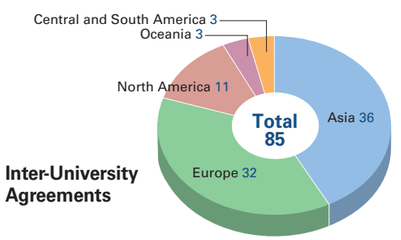
- The FrontierLab@OsakaU is now widely known in the US and EU countries in addition to Asian countries. OUSSEP and other short-term programs attract many students from all over the world. We will put more efforts in promoting these short-term educational programs.
- A variety of short term study abroad programs are now being developed. We will support these development so that our students become better prepared in trans-cultural communicability.
- Actively participating in international networks such as the Association of Pacific Rim Universities (APRU) and the Association of East Asian Research Universities (AEARU), while cooperating with various international organizations such as the Japan International Cooperation Agency (JICA), and The National Museum of Ethnology.
- Strengthen overall support to international students and scholars throughout their stay in the university, from the time of arrival in Japan until the completion of the visit.

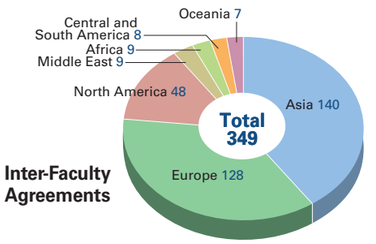
Academic Exchange Agreements with Universities Abroad

85 Inter -University and 349 Inter-Faculty Exchange Agreements

Osaka University has concluded academic exchange agreements with universities and institutions throughout the world for both inter-university and inter-faculty exchanges. Extensive exchanges of students, researchers and joint research projects are being conducted with these partner institutions.

Mutual tuition waivers may be implemented for students who participate in exchange programs with the universities marked with a "⁎" in the following list :

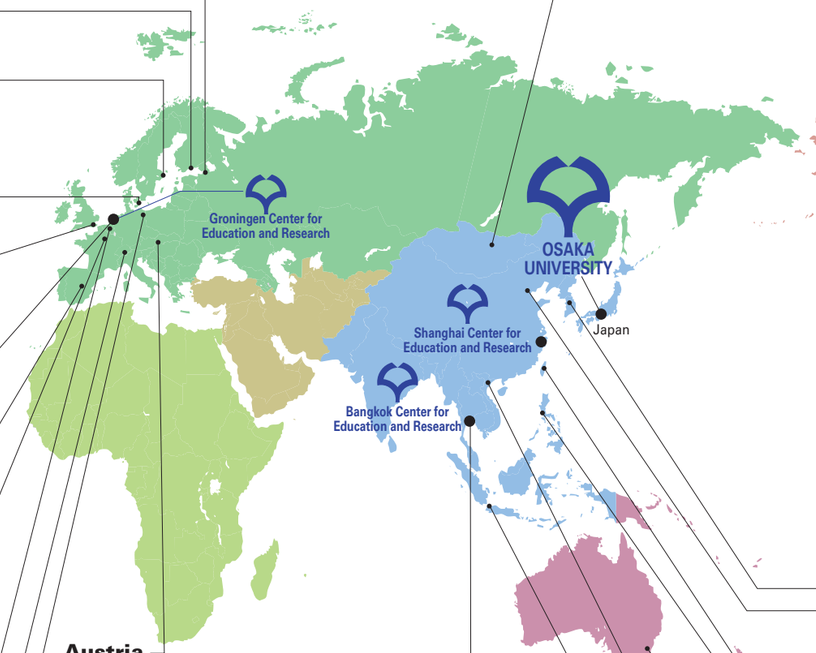




Inter-University Exchange Agreements

(as of November 1, 2010)

Country / Region
University/Institution ⁎
(⁎ Mutual Tuition Waivers may be implemented)



Russia
- Saint Petersburg State University ⁎

Finland
- Åbo Akademi University

Sweden
- Karolinska Institutet
- Royal Institute of Technology (KTH) ⁎
- University of Gothenburg ⁎

Denmark
- The University of Copenhagen ⁎

UK
- The University of Nottingham ⁎
- The University of Sheffield ⁎
- University College London

Netherlands
- Delft University of Technology ⁎
- University of Groningen ⁎

Spain
- Universidad Autónoma de Madrid ⁎
- University of Valladolid ⁎

France
- Centre National de la Recherche Scientifique
- Consortium Francais du Collège Doctoral Franco-Japonais (CDFJ) ⁎
- École Nationale Supérieure de Chimie de Paris ⁎
- Grenoble Universités (Consortium of Universities in Grenoble) ⁎
- Pierre & Marie Curie University ⁎
- University of Strasbourg ⁎

Belgium
- Université catholique de Louvain (UCL) ⁎

Switzerland
- École Polytechnique Fédérale de Lausanne (EPFL) ⁎

Germany
- Bielefeld University ⁎
- Friedrich-Alexander Universität Erlangen-Nürnberg ⁎
- Heidelberg University ⁎
- Johann Wolfgang Goethe-Universität Frankfurt am Main ⁎
- Ludwig-Maximilians- University of Munich ⁎
- Ruhr –University Bochum ⁎
- RWTH Aachen University ⁎
- Technische Universität München ⁎
- University of Augsburg ⁎

Austria
- The University of Vienna ⁎

Thailand
- Chiang Mai University ⁎
- Chulalongkorn University ⁎
- Department of Medical Sciences, Ministry of Public Health
- Kasetsart University ⁎
- King Mongkut's University of Technology Thonburi ⁎
- Mahidol University ⁎
- Thammasat University ⁎

Others
- The Industrialised Countries Instrument Education Cooperation Programme ⁎

Mongolia
- National University of Mongolia ⁎

Canada
- Canada-Japan Strategic Student Exchange Program ⁎
- McGill University ⁎
- McMaster University ⁎
- The Conference of Rectors and Principals of Quebec Universities
- University of British Columbia ⁎

USA
- Cornell University
- Nazareth College of Rochester ⁎
- Texas A&M University ⁎
- University of California ⁎
- University of Washington ⁎
- Wesleyan College ⁎

Mexico
- National Autonomous University of Mexico ⁎

Peru
- Pontifical Catholic University of Peru ⁎

Blazil
- Universidade de São Paulo ⁎

Korea
- Changwon National University ⁎
- Chonnam National University ⁎
- Chung-Ang University ⁎
- Chungnam National University ⁎
- Gyeongsang National University ⁎
- Hanyang University ⁎
- Pusan National University ⁎
- Seoul National University ⁎
- Yonsei University

China
- Beijing Normal University ⁎
- Fudan University ⁎
- Nanjing University ⁎
- Peking University ⁎
- Shanghai Jiao Tong University ⁎
- Tsinghua University ⁎
- Tongji University ⁎
- Wuhan University ⁎
- Xi'an Jiaotong University ⁎
- Zhejiang University ⁎

Taiwan
- National Cheng Kung University ⁎
- National Taiwan University ⁎
- National Tsing Hua University ⁎

Phillippines
- Ateneo de Manila University ⁎
- De La Salle University ⁎
- University of the Philippines ⁎

Australia
- Monash University ⁎
- The Australian National University ⁎
- The University of Queensland ⁎

Vietnam
- Vietnam National University- Ho Chi Minh City
- Vietnam National University, Hanoi ⁎

Indonesia
- Institut Teknologi Bandung ⁎

Inter- Faculty Exchange Agreements (as of November 1, 2010)

Country/Region		University/Institute	Osaka University
AFRICA (9)	Congo	Kinshasa University (The Faculty of Sciences)	Research Institute for Microbial Diseases
	Egypt	＊ Ain Shams University (Faculty of Engineering)	Graduate School of Information Science and Technology
		Alexandria University (Faculty of Veterinary Medicine)	Research Institute for Microbial Diseases
		＊ Cairo University	School of Foreign Studies, Graduate School of Language and Culture
		Central Metallurgical Research and Development Institute, Cairo	Joining and Welding Research Institute
	Morocco	＊ Al Akhawayn University (School of Science and Engineering)	School / Graduate School of Engineering
		The Institute for Nanomaterial & Nanotechnology	School / Graduate School of Engineering
	South Africa	iThemba Laboratory for Accelerator Based Sciences (LABS)	Research Center for Nuclear Physics
	Tunisia	＊ University of 7 November at Carthage	School of Foreign Studies, Graduate School of Language and Culture
ASIA (140)	China	Beijing Foreign Studies University	School of Foreign Studies
		＊ Beijing Language and Culture University (Graduate School, College of Chinese Language)	School of Foreign Studies, Graduate School of Language and Culture
		China Institute of Atomic Energy	Graduate School of Science
		＊ China Medical University	Faculty of Medicine / Graduate School of Medicine
		＊ Dalian University of Technology (School of Civil and Hydraulic Engineering)	Graduate School of Engineering Science
		＊ East China University of Politics and Law	School of Law / Graduate School of Law and Politics, Law School
		Fudan University (Medical Center)	Faculty of Medicine / Graduate School of Medicine
		＊ Graduate School Tianjin University	School/Graduate School of Engineering
		Harbin Institute of Technology (School of Materials Science and Engineering)	Joining and Welding Research Institute
		Harbin Institute of Technology (School of Science)	Graduate School of Information Science and Technology
		＊ Huazhong Normal University (School of Foreign Language and Literature, College of International Cultural Exchange, Center for Language and Language Education)	School of Foreign Studies, Graduate School of Language and Culture
		Inner Mongolia Normal University (The School of Chemistry and Environment Science)	Institute of Scientific and Industrial Research
		Institute of Applied Physics and Computational Mathematics	Institute of Laser Engineering
		Institute of Materials Joining Shandong University	Joining and Welding Research Institute
		Institute of Modern Physics, Chinese Academy of Sciences	Research Center for Nuclear Physics
		＊ Jilin University (College of Electronic Science and Engineering)	School/Graduate School of Engineering
		＊ Nankai University (College of Chemistry)	School/Graduate School of Engineering
		National Laboratory on High Power Laser and Physics	Institute of Laser Engineering
		＊ North China Electric Power University (School of Nuclear Science and Engineering)	School / Graduate School of Engineering
		Northeastern University (The State Key Laboratory of Rolling and Automation)	Joining and Welding Research Institute
		Peking University (The School of Electronics Enginering and Computer Science)	Institute of Scientific and Industrial Research
		Peking University (Institute of Physical Chemistry)	Institute for Protein Research
		Peking University (The School of Electronics Enginering and Computer Science)	Graduate School of Informantion Science and Technology
		School of Physics and Nuclear Energy Engineering (SPANEE) of Beihang University (BUAA)	Research Center for Nuclear Physics
		Shandong Jiaotong University	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
		＊ Shanghai Institute of Microsystem and Information Technology	School / Graduate School of Engineering Science
		Shanghai Institute of Nuclear Research, Chinese Academy of Sciences	Research Center for Nuclear Physics
		Shanghai International Studies University	School of Foreign Studies
		＊ Shenzhen University	School of Foreign Studies, Graduate School of Language and Culture
		＊ South China University of Technology (Faculty of Materials Science and Engineering)	School / Graduate School of Science
		Southeast University (State Key Laboratory of Bioelectronics)	Institute of Laser Engineering
		Southwest Institute of Nuclear Physics and Chemistry	Institute of Laser Engineering
		＊ Technical Institute of Physics and Chemistry, Chinese Academy of Sciences	Graduate School of Engineering
		The Fourth Military Medical University	Faculty of Medicine / Graduate School of Medicine
		The Fourth Military Medical University (School of Stomatology)	School / Graduate School of Dentistry
		The Shanghai Institute of Applied Physics, Chinese Academy of Sciences	School / Graduate School of Science
		The University of Hong Kong (School of Professional and Continuing Education)	Center for Japanese Language and Culture
		Tianjin University (School of Materials Science and Engineering)	Joining and Welding Research Institute
		Tongji University	School of Foreign Studies
		Tsinghua Univesity (College of Law and Graduate School of Public-Private Law)	School of Law / Graduate School of Law and Politics
	Hong Kong	Business School, Hong Kong University of Science and Technology (Center for Experimental Business Research)	Institute of Social and Economic Research
		＊ Hong Kong University of Science and Technology (School of Science)	School / Graduate School of Engineering Science
ASIA (140)	India	＊ Alagappa University	School / Graduate School of Science
		Bose Institute	Research Center for Nuclear Physics
		Indian Institute of Chemical Biology	Indian Institute of Chemical Biology
		Indian Institution of Technology Delhi (IITD), Department of Physics	Institute of Science and Industrial Research
		Institute for Plasma Research	Institute of Laser Engineering
		＊ Tata Institute of Fundamental Research (School of Natural Science)	School / Graduate School of Science
	Indonesia	＊ Gadjah Mada University (Faculty of Engineering)	School / Graduate School of Engineering
	Korea	Chosun University	Joining and Welding Research Institute
		＊ Chosun University (Faculty of Engineering)	School / Graduate School of Engineering
		＊ Chung-Ang University (College of Engineering)	School / Graduate School of Engineering
		Chungnam National University (College of Natural Sciences)	Institute of Scientific and Industrial Research
		Dankook University(Medical Laser Research Center)	Institute of Laser Engineering
		＊ Ewha Womans University (College of Nursing Science)	Faculty of Medicine / Graduate School of Medicine
		＊ Ewha Womans University (Graduate School of Medicine, College of Medicine)	Faculty of Medicine / Graduate School of Medicine
		Gwangju Institute of Science and Technology	Graduate School of Engineering
		Gwangju Institute of Science and Technology (Center for Electronic Materials Research)	Institute of Laser Engineering
		＊ Inha University (Graduate School of Department of Physics, College of Natural Science)	Graduate School / School of Engineering Science
		Keimyung University (Center for Traditional Microorganism Resources)	International Center for Biotechnology
		＊ Konkuk University (College of Law)	School of Law / Graduate School of Law and Politics, Law School
		＊ Kookmin University (College of Natural Sciences)	School / Graduate School of Engineering
		Korea Advanced Institute of Science and Technology (Laser Science Research Center)	Institute of Laser Engineering
		Korea Advanced Institute of Science and Technology (Department of Chemistry)	Institute of Science and Industrial Research
		Korea Maritime University (Korea Maritime University College of Maritime Sciences, College of Engineering)	Joining and Welding Research Institute
		Korea Photonics Technology Institute (KOPTI)	Institute of Laser Engineering
		Korea Univerisity (College of Science and Technology)	Institute of Scientific and Industrial Research
		＊ Korea Univerisity (Telecommunication Mathematics Research Center)	Graduate School of Information Science and Technology
		＊ Kumoh National Institute of Technology	School / Graduate School of Engineering
		Kwangnwoon University (PDP Research Center)	Joining and Welding Research Institute
		＊ Kyung Hee University	School of Foreign Studies, Graduate School of Language and Culture
		Kyungnam University (Division of Food Science and Biotechnology)	International Center for Biotechnology
		Kyungnam University(Industry Academic Cooperation Foundation)	Joining and Welding Research Institute
		＊ Kyungpook National University (School of Dentistry)	School / Graduate School of Dentistry
		Kyungwon University (Gachon Bionano Research Institute)	Institute of Science and Industrial Research
		Pohang Institute of Science and Technology (Pohang Accelerator Laboratory)	Institute of Laser Engineering
		Pohang University of Science and Technology (School of Environmental Science and Engineering, Department of Chemical Engineering)	Institute of Science and Industrial Research
		Pohang University of Science and Technology (Department of Life Science, Division of Integrative Biosciences and Biotechnology)	Immunology Frontier Research Center
		Pukyong National University (Basic Science Research Institute)	Institute of Scientific and Industrial Research
		Pusan National University (College of Natural Sciences)	Institute of Scientific and Industrial Research
		Pusan National University (School of Law)	School of Law / Graduate School of Law and Politics, Law School
		Research Institute of Industrial Science and Technology	Joining and Welding Research Institute
		＊ Seoul National University (College/Graduate School of Engineering)	School / Graduate School of Engineering
		Seoul National University (Department Pharmacy, Structure Research Center for Innovative Drug Development)	Institute for Protein Research
		Seoul National University (Institute of Environmental Protection and Safety)	Department for the Administration of Safety and Hygiene
		Sungkyunkwan University (Center for Advanced Plasma Surface Technology)	Joining and Welding Research Institute
		Sungkyunkwan University (School of Information and Communication Engineering)	Graduate School of Information Science and Technology
		Sungkyunkwan University (IT Research Centers / Institute of School of Information and Communication Engineering)	Graduate School of Information Science and Technology
		＊ Yeungnam University (College of Law and Department of Public-Private law in the Graduate School)	School of Law / Graduate School of Law and Politics, Law School
	Malaysia	＊ Universiti Malaysia Sarawak	Faculty of Medicine / Graduate School of Medicine
		＊ Universiti Sains Malaysia, Penang (School of Pharmaceutical Sciences) / (School of Computer Sciences)	Graduate School of Information Science and Technology / Cybermedia Center
		＊ Universiti Teknologi Malaysia	Graduate School of Engineering Science / Research Center for Solar Energy Chemistry
		＊ Universiti Teknologi Malaysia (Faculty of Science)	School / Graduate School of Science

＊Mutual Tuition Waivers may be implemented

Country/Region		University/Institute	Osaka University
ASIA (140)	Malaysia	＊ University of Maylaya (Faculty of Science)	Graduate School / School of Science
	Nepal	＊ Tribhuvan University (Institute of Engineering)	School / Graduate School of Engineering
	Pakistan	Government College University Lahore	School of Foreign Studies
		University of the Punjab	School of Foreign Studies
	Philippines	De La Salle University (College of Computer Studies)	Institute of Scientific and Industrial Research
		＊ University of the Philippines in Diliman	School / Graduate School of Engineering
	Singapore	＊ Nanyang Technological University (College of Engineering)	School / Graduate School of Engineering
		Nanyang Technological University (School of Materials Science and Engineering)	Research Center for Solar Energy Chemistry
		＊ Nanyang Tecnological University (School of Computer Engineering)	Graduate School of Information Science and Technology / Cybermedia Center
		＊ National University of Singapore (Faculty of Engineering)	School / Graduate School of Engineering Science
	Taiwan	＊ Institute of Basic Medical Science National Cheng Kung University	Graduate School of Frontier Biosciences
		＊ National Cheng Kung University	Osaka School of International Public Policy
		＊ National Cheng Kung University (College of Management and College of Social Sciences)	School / Graduate School of Economics
		＊ National Chengchi University (College of Law)	Graduate School of Law and Politics / School of Law
		＊ National Chiao Tung University (College of Science)	School / Graduate School of Science
		National Synchrotron Radiation Research Center	Institute for Protein Research
		National Taiwan Normal University (College of Science)	Institute of Scientific and Industrial Research
		＊ National Taiwan University (the College of Science and the College of Life Science)	School / Graduate School of Science
		＊ National Taiwan University (College of Science)	School / Graduate School of Engineering
	Thailand	King Mongkut's Institute of Technology Ladkrabang,THAILAND (Faculty of Engineering)	School / Graduate School of Engineering
		Mahidol University (Faculty of Science)	International Center for Biotechnology
		Mahidol University (Faculty of Science)	School / Graduate School of Pharmaceutical Sciences
		Mahidol University (Faculty of Pharmacy)	Graduate School of Pharmaceutical Sciences
		National Nanotechnology Center, National Science and Technology Development Agency, Thailand	Joining and Welding Research Institute
		Rangsit University	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
		＊ Silpakorn University (Facutlty of Arts)	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
		＊ Thai-Nichi Institute of Technology	School / Graduate School of Engineering Science
		＊ Khon Kaen University (Faculty of Humanities and Social Sciences)	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
	Vietnam	＊ Electric Power University	School / Graduate School of Engineering
		＊ Hanoi National University of Education	School of Foreign Studies, Research Institute for World Languages
		＊ Hanoi University	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
		＊ Hanoi University of Civil Engineering	School / Graduate School of Engineering
		＊ Hochiminh City University of Pedagogy	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
		＊ Hong Bang University International	School of Foreign Studies, Graduate School Language and Culture, Research Institute for World Languages
		＊ Hue University (University of Sciences)	School / Graduate School of Engineering
		＊ Nong Lam University	School / Graduate School of Engineering
		Vietnam International Education Development, Ministry of Education and Training	Graduate School of Engineering Science
		＊ Vietnam National University of Hanoi (College of Technology) /Vietnamese Academy of Science and Technology (Institute of Materials Science)	Graduate School of Engineering Science
		＊ Vietnam National University of Ho Chi Minh City (Institute for Environment and Resources)	Graduate School of Engineering
		＊ Vietnam National University-Ho Chi Minh City	School / Graduate School of Science
		＊ Vietnam National University-Ho Chi Minh City, University of Natural Sciences	School / Graduate School of Engineering Science
		＊ Vietnam National University, Hanoi (Hanoi University of Science)	School / Graduate School of Science
		＊ Vietnam National University, Ho Chi Minh City (University of Technology)	School / Graduate School of Engineering
		＊ Vietnamese Academy of Science and Technology (Institute of Physics and Electronics)	School / Graduate School of Science
		＊ Vietnamese Academy of Science and Technology (Institute of Biotechnology)	Graduate School of Engineering
		＊ Vietnamese Academy of Science and Technology (Institute of Materials Science)	Graduate School of Engineering Science
	Others	Korea Atomic Energy Research Institute (KAERI) / Shanghai Institute of Optics and Fine Mechanics (SIOM)	Institute of Laser Engineering
CENTRAL AND SOUTH AMERICA (8)	Brazil	＊ Federal University of Rio De Janeiro (Faculty of Architecture and Urbanism)	School / Graduate School of Engineering
		＊ Rio de Janeiro State University	School of Foreign Studies / Graduate School of Language and Culture / Center for Japanese Language and Culture
		＊ Rio de Janeiro State University (Faculty of Law)	School of Law / Graduate School of Law and Politics, Law School
	Cuba	Center for Genetic Engineering and Biotechnology	Institute for Protein Research

Country/Region		University/Institute	Osaka University
CENTRAL AND SOUTH AMERICA (8)	Dominican Republic	Universidad Tecnologica de Santiago(Medical School)	Faculty of Medicine /Graduate School of Medicine
	Mexico	Universidad Autónoma de Nuevo Leon (Facultad de Odonología)	Graduate School of Dentistry
		＊ Universidad Nacional Autónoma de México (Departamento de Genética Molecular Instituto de Fisiología Celular)	Institute of Frontier Biosciences
	Republica De Panama	Technological University of Panama (Faculy of mechanical engineering)	Joining and Welding Research Institute
EUROPE (128)	Belgium	＊ Interuniversitair Micro-Elektronica Centrum Vzw	Graduate School of Information Science and Technology
		＊ Katholieke Universiteit Leuven	School of Foreign Studies / Graduate School of Language and Culture / Center for Japanese Language and Culture
		＊ Katholieke Universiteit Leuven (Faculty of Science)	School / Graduate School of Engineering
		＊ University of Liege (Faculty/Graduate School of Applied Science)	School / Graduate School of Engineering
	Bulgaria	The Univeristy of Sofia "St. Kliment Ohridski"	Graduate School of Language and Culture / Center for Japanese Language and Culture
	Czech Republic	University of West Bohemia, Plzen (Faculty of Applied Sciences)	Joining and Welding Research Institute
	Denmark	＊ University of Copenhagen	Graduate School of Language and Culture
		＊ University of Southern Denmark (Faculty of Science)	Graduate School of Information Science and Technology
	Finland	The University of Turku	Graduate School of Language and Culture
		＊ University of Oulu (Department of Information Processing Science)	School / Graduate School of Engineering Science
		＊ University of Oulu (Faculty of Medicine, Department of Nursing and Health Administration)	Faculty of Medicine
	France	＊ École d'Architecture de Paris La Villette	School / Graduate School of Letters School / Graduate School of Engineering
		＊ École Normale Superieure de Cachan	School / Graduate School of Engineering
		＊ ESCP-EAP (European School of Management)	School / Graduate School of Economics
		＊ ESSEC Business School	Graduate School of Economics
		French School of Asian Studies	Graduate School of Letters
		＊ Institut d'Optique Garduste School	Graduate School of Engineering Science, School of Engineering Science
		Intense Laser Users Facility, Institute of Science and Technology	School/Graduate School of Engineering
		＊ Lille Institute of Political Studies (Sciences Po Lille)	School of Foreign Studies
		＊ Provence University (Aix-Marseille I)	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
		＊ Université de Lyon 3	Graduate School of Law and Politics, School of Law
		Université de Toulouse I -Sciences Sociales	School of Law / Graduate School of Law and Politics, Law School
		＊ University of Paris-Sud 11 (Faculty of Science)	School / Graduate School of Science
		University of Provence (Faculty of Science of Matters)	School / Graduate School of Engineering
		＊ University of Toulouse-le Mirail	School of Foreign Studies / Graduate School of Language and Culture / Center for Japanese Language and Culture
	Germany	＊ Bauhaus-Universität Weimar (Faculty of Media)	Graduate School of Information Science and Technology
		Bauhaus-Universität Weimar (Faculty of Media)	Cybermedia Center
		＊ Bielefeld University (Faculty of Technology)	School / Graduate School of Engineering
		Charité-Universitätsmedizin Berlin	Faculty of Medicine / Graduate School of Medicine
		Forschungszentrum Jülich GmbH	Institute of Scientific and Industrial Research
		＊ Freie Universitaet Berlin (Institute of Chemistry)	Graduate School of Frontier Biosciences
		＊ Freie Universität Berlin	School of Law / Graduate School of Law and Politics, Law School
		＊ Georg-Augusut-Universitat Gottingen (Faculty of Scocial Sciences, Humanities, Theology)	School / Graduate School of letter, School of Foreign Studies, Graduate School of Language of Culture, Research Institute for World Languages
		Heidelberg University (Dental School and Hospital, Medical Faculty)	Graduate School of Dentistry
		＊ Henrich Heine University of Düsseldorf (Faculty of Arts)	School / Graduate School of Human Science
		＊ Henrich Heine University of Düsseldorf (Faculty of Arts)	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
		Helmholtz-Zentrum Berlin fur Materialien und Energie	Research Center for Solar Energy Chemistry
		＊ Ludwig-Maximilians-Universität Munich (Faculty of Chemistry and Pharmacy)	School / Graduate School of Science
		Max-Planck-Institut für Quantenoptik	Institute of Laser Engineering
		Otto-von-Guericke University, Magdeburg (Faculty of Natural Science)	Institute of Scientific and Industrial Research
		＊ RWTH Aachen University (Faulty of Mathematics, Computer Science and Natural Sciences)	Graduate School of Engineering Science
		＊ RWTH Aachen University (Faulty of Mathematics, Computer Science and Natural Sciences)	Shool / Graduate School of Engineering
		Technische Universität Berlin (Faculty II, Mathematics and Natural Sciences)	School / Graduate School of Engineering Science
		＊ Universität Karlsruhe (Faculty of Physics)	Graduate School of Engineering Science
		＊ Universität Koblenz-Landau (Institute for Computer Science)	School / Graduate School of Engineering Science

＊Mutual Tuition Waivers may be implemented

Country/Region			University/Institute	Osaka University
EUROPE (128)	Germany	*	Universität Koblenz-Landau (Institute for Computer Science)	School / Graduate School of Engineering Science
			Universität zu Köln (Musikwissenschaftlichen Institut)	School / Graduate School of Letters
			University of Dortmund (Department of Materials Engineering Faculty of Mechanical Engineering)	Joining and Welding Research Institute
		*	University of Dortmund (Department of Physics)	School / Graduate School of Engineering Science
		*	University of Hamburg (Faculty of Physics)	Graduate School of Engineering Science
			University of Kaiserslautern	Graduate School of Information Science and Technology
		*	University of Kaiserslautern (Department of Physics)	Graduate School / School of Engineering Science
		*	Westfälische Wilhelms-Universität, Münster (Department of Physics)	School / Graduate School of Science
	Hungary	*	Budapest University of Technology and Economics	School / Graduate School of Engineering
		*	Eötvös Loránd University	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
		*	Gáspár Károli University of the Reformed Church	School of Foreign Studies, Graduate School of Language and Culture
			Hungarian Academy of Sciences (Institute of Nuclear Research)	Research Center for Nuclear Physics
			Hungarian Academy of Sciences (Research Institute for Particle and Nuclear Physics)	Research Center for Nuclear Physics
	Italy		CeUB at Bertinoro, Residential Center of the University of Bologna-Agenzia per lo Sviluppo del Design Industriale	Center for the Study of Communication-Design
			Instituti Ortopedici Rizzoli	The Center for Advanced Medical Engineering and Informatics
		*	Pisa University (Faculty of Engineering, Aerospace Engineering Department)	School / Graduate School of Engineering Science
		*	Scuola Superiore Sant'Anna	Graduate School of Engineering
		*	Università degli Studi di Perugia	Graduate School of Science
			Universita'degli Studi di Napoli "L'Orientale"	Graduate School of Language and Culture, Center for Japanese Language and Culture
		*	University of Padova (The Faculty of Engineering)	School / Graduate School of Engineering
	Kazakhstan		Al-Farabi Kazakh National University	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
	Norway		University of Bergen	Graduate School of Language and Culture, Center for Japanese Language and Culture
			University of Bergen (Faculty of Mathematics and Natural Sciences)	School / Graduate School of Engineering Science
	Poland	*	Jagiellonian University (Institute of European Studies)	School / Graduate School of letters
			Jagiellonian University (Faculty of Philology)	Graduate School of Language and Culture / Center for Japanese Language and Culture
		*	Technical University of Lodz	School / Graduate School of Engineering
			The Andrzej Soltan Institute for Nuclear Studies (IPJ)	Research Center for Nuclear Physics
			Warsaw University of Technology (Faculty of Materials Science and Engineering)	Joining and Welding Research Institute
	Portugal	*	Lisbon New University	School of Foreign Studies, Research Institute for World Languages
	Romania	*	Alexandru Ioan Cuza University (Faculty of Physics)	School / Graduate School of Engineering Science
			University of Bucharest (Faculty of Foreign Languages and Literatures)	Graduate School of Language and Culture / Center for Japanese Language and Culture
	Russia		Academy of Sciences of Russian Federation (General Physics Institute)	Institute of Laser Engineering
			Far Eastern National University (Faculty of Physics)	Research Center for Nuclear Physics
		*	Far Eastern National University (Oriental Studies Institute)	Graduate School of Language and Culture
			Far-Eastern State Technical University	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
			Instiute of Applied Physics, Russian Academy of Sciences (Plasma Physics and High Power Electronics Department)	Joining and Welding Research Institute
			Joint Institute for Nuclear Research, Dubna (Laboratory of High Energies)	Research Center for Nuclear Physics
			Moscow State Engineering Physics Institute (Technical University) of Russian Federation	Research Center for Nuclear Physics
		*	Moscow State Linguistic University	School of Foreign Studies / Graduate School of Language and Culture
		*	Moscow State University (Physics Department, Chemistry Department)	School/Graduate School of Science
			N.I.Lobachevsky State University of Nizhni Novgorod	Institute of Laser Engineering
			Russian Academy of Science Petersburg Nuclear Physics Institute	Research Center for Nuclear Physics
		*	St. Petersburg State Technical University (Physics and Mechanics Faculty)	School / Graduate School of Science
		*	Ural State University	School of Foreign Studies, Graduate School of Language and Culture
		*	Vladivostok State University of Economics and Service (Institute of International Relationships)	Graduate School of Language and Culture
	Serbia		Institute of Technical Sciences of Serbian Academy of Sciences and Arts	Joining and Welding Research Institute
			Vinca Institute of Nuclear Science in Belgrade	Institute of Laser Engineering
	Slovak Republic		Technical University of Kosice (Faculty of Metallurgy)	Joining and Welding Research Institute
			Welding Research Institute	Joining and Welding Research Institute
EUROPE (128)	Spain	*	Centro Nacional de Investigaciones Cardiovasculares	Institute of Frontier Biosciences
			Polytechnical University of Madrid (Department of Nuclear Energy)	Institute of Laser Engineering
			The Universitat Autónoma de Barcelona	Graduate School of Language and Culture, Center for Japanese Language and Culture
		*	The University of Santiago de Compostela	School of Foreign Studies, Research Institute for World Languages
			Universidad Politecnica de Madrid	School / Graduate School of Engineering
	Sweden		Karolinska Institutet, the Medical University of Stockholm	School of Medicine
		*	The University of Växjö	School / Graduate School of Human Sciences
	Switzerland	*	The University of Zurich	School of Foreign Studies / Graduate School of Language and Culture / Center for Japanese Language and Culture
			University of Geneva (Faculty of Science)	Institute of Scientific and Industrial Research
		*	University of Zurich (Faculty of Science)	Graduate School of Engineering Science
	The Netherlands	*	Eindhoven University of Technology (Department of Chemistry and Chemical Engineering, Department of Biomedical Engineering)	School / Graduate School of Science
			Leiden University (Faculty of Arts)	Graduate School of Language and Culture / Center for Japanese Language and Culture
		*	University of Groningen	Graduate School of Law and Politics / Law School
			University of Groningen (Kernfysisch Versneller Institute)	Research Center for Nuclear Physics
		*	University of Groningen (University Medical Center Groningen/Faculty of Medical Sciences)	Faculty of Medicine / Graduate School of Medicine
	UK		Council for Central Laboratory of the Research Councils (CCLRC)	School / Graduate School of Engineering
		*	Cranfield Health, Cranfield University	Graduate School of Frontier Biosciences
			Imperial College London (Faculty of Natural Science)	School / Graduate School of Science
			Rutherford Appleton Laboratory	Institute of Laser Engineering
		*	The University of Manchester (Faculty of Humanities)	School / Graduate School of Letters
		*	The University of Manchester (Faculty of Life Sciences)	School / Graduate School of Science / Institute for Protein Research
		*	University of Oxford (Department ot Engineering Science)	School / Graduate School of Engineering
			University of Oxford (Department of Physiology, Anatomy and Genetics)	The Center for Advanced Medical Engineering and Informatics
			University of Oxford (Faculty of Oriental Studies)	Graduate School of Language and Culture, Center for Japanese Language and Culture
			University of Leeds Dental Institute	Graduate School of Dentistry
		*	University of London (School of Oriental and African Studies)	School / Graduate School of Economics
		*	University of London (School of Oriental and African Studies)	School of Foreign Studies / Research Institute for World Languages / Center for Japanese Language and Culture
			University of London (School of Slavonic and East European Studies)	Graduate School of Language and Culture
			University of London (University College London)	Institute of Scientific and Industrial Research
			University of Sheffield (School of Clinical Dentistry)	Graduate School of Dentistry
		*	University of Strathclyde (Faculty of Engineering)	School / Graduate School of Engineering
		*	University of Warwick (Faculty of Science)	School / Graduate School of Science
	Ukraina		Institute of Plasma Physics of the National Science Center, Academy of Sciences of Ukraine	Joining and Welding Research Institute
	Uzbekistan		Samarkand state University	Research Institute for World Languages
MIDDLE EAST (9)	Iran		Shiraz University	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
			The Cultural Research Bureau	School of Foreign Studies, Research Institute for World Languages
			The Great Islamic Encyclopedia	School of Foreign Studies, Research Institute for World Languages
			The University of Tehran	School of Foreign Studies, Research Institute for World Languages
			The Written Heritage Research Center	School of Foreign Studies, Research Institute for World Languages
	Syria		Aleppo University	School of Foreign Studies, Graduate School of Language and Culture, Research Institute for World Languages
		*	Damascus University	School of Foreign Studies, Graduate School of Language and Culture
	Turkey	*	Ankara University (Faculty of Dentistry)	School / Graduate School of Dentistry
		*	Istanbul University (Science Faculty)	Graduate School / School of Science
NORTH AMERICA (48)	Canada		Canada's National Laboratory for Particle and Nuclear Physics (TRIUMF)	Graduate School of Science
			McGill University (Faculty of Law, Faculty of Arts)	School of Law / Graduate School of Law and Politics
			National Research Council of Canada	Institute of Laser Engineering
			University of Alberta, Edmonton (ALTECH Project)	Institute of Laser Engineering
			University of Alberta (Faculty of Engineering)	Institute of Laser Engineering
			University of British Columbia (Faculty of Science)	School / Graduate School of Science
		*	University of British Columbia (UBC Sauder School of Business)	School of Economics
			University of Montreal (Center of Mathematical Research)	Graduate School of Science

*Mutual Tuition Waivers may be implemented

Country/Region		University/Institute	Osaka University
NORTH AMERICA (48)	USA	Boston University (School of Science)	School / Graduate School of Science
		California Institute of Technology	Immunology Frontier Research Center
		Colorado State University	School / Graduate School of Engineering
		Forsyth Dental Center	School / Graduate School of Dentistry
		＊ Georgia State University (College of Arts and Sciences)	School of Foreign Studies, Graduate School of Language and Culture
		Harvard Medical School	Immunology Frontier Research Center
		Institute for Systems Biology	Immunology Frontier Research Center
		National Institutes of Allergy and Infectious Diseases	Immunology Frontier Research Center
		National Severe Storms Laboratory, U.S.A.	School / Graduate School of Engineering
		New York University (School of Medicine)	Immunology Frontier Research Center
		Northwestern University (School of Engineering and Applied Science)	School / Graduate School of Engineering
		Pacific Northwest National Laboratory	Institute of Scientific and Industrial Research
		＊ Purdue University (School of Engineering)	School / Graduate School of Engineering
		Southern Illinois University at Carbondale (Department of Economics)	Institute of Social and Economic Research
		Stanford University	Immunology Frontier Research Center
		The Johns Hopkins University (Department of Economics)	School / Graduate School of Economics
		The Ohio State University (Industrial, Welding and Systems Engineering)	Joining and Welding Research Institute
		The State University of New Jersey, Rutgers (Faculty of Arts and Sciences, Graduate School of Education)	
		The State University of New York at Buffalo (School of Dental Medicine)	School / Graduate School of Dentistry
		The University of Arizona	School / Graduate School of Pharmaceutical Sciences
		＊ The University of Georgia	School of Foreign Studies, Graduate School of Language and Culture
		The University of Wisconsin (Law School)	School of Law / Graduate School of Law and Politics
		University of California, Berkeley	Graduate School of Language and Culture, Center for Japanese Language and Culture
		University of California, Berkeley (Department of History of Art)	School / Graduate School of Letters
		University of California, San Diego (Center for Research in Biological Structure)	Research Center for Ultra-High Voltage Electron Microscopy
		University of California, San Diego (The California Institute for Telecommunications and Information Technology)	Graduate School of Information Science and Technology, Cybermedia Center
		University of California, San Francisco	Immunology Frontier Research Center
		University of Central Florida (Center for Research and Education in Optics and Lasers)	Institute of Laser Engineering
		＊ University of Houston (College of Natural Sciences)	School / Graduate School of Engineering
		University of Houston (College of Natural Sciences and Mathematics)	Graduate School / School of Science
		University of Illinois (Fusion Studies Laboratory)	Institute of Laser Engineering
		University of Maryland at Baltimore (College of Dental Surgery, Dental School)	Graduate School of Dentistry
		University of Maryland at College Park	Institute of Scientific and Industrial Research
		University of Maryland, College Park (Department of Economics)	School / Graduate School of Economics
		University of Massachusetts, Amherst (College of Natural Sciences and Mathematics and College of Engineering)	School / Graduate School of Engineering Science School / Graduate School of Science
		University of Pittsburgh (School of Medicine)	Graduate School of Medicine
		University of Rochester (Laboratory for Laser Energetics, College of Engineering & Applied Science, Institute of Optics)	School / Graduate School of Engineering, Institute of Laser Engineering
		＊ University of South Carolina (College of Engineering and Computing)	School / Graduate School of Engineering Science
		University of Tennessee (Center for Materials Processing, College of Engineering)	Joining and Welding Research Institute
		＊ Worcester Polytechnic Institute WPI (the Computer Science Department, the Interdisciplinary and Global Studies Division)	School / Graduate School of Engineering Science , Graduate School of Engineering Science , Cybermedia Center
OCEANIA (7)	Australia	＊ Swinburne University of Technology (Faculty of Engineering and Industrial Sciences)	School / Graduate School of Engineering
		University of Adelaide (Department of Physics and Mathematical Physics and the Institute for Theoretical Physics)	Research Center for Nuclear Physics
		＊ University of Adelaide (The Faculty of Humanities and Social Sciences)	School / Graduate School of Human Sciences
	New Zealand	The Human Interface Technology Lab New Zealand (HIT Lab NZ)	Cybermedia Center
		The University of Auckland (The Bioengineering Institute)	The Center for Advanced Medical Engineering and Informatics
		＊ University of Canterbury (College of Engineering)	Graduate School of Information Science and Technology
		＊ Victoria University of Wellington	School of Foreign Studies / Graduate School of Language and Culture / Center for Japanese Language and Culture

＊Mutual Tuition Waivers may be implemented

Financial Figures

Budget (FY 2010,in millions of Yen)

Revenue

Management Expenses Grants			49,891
Facility Maintenance Expenses			7,599
Revenue from Government Grants and Other Funding			7,800
National University Financial and Administrative Center Facility Funds			122
Independent Revenue	Tuition/Enrollment/Application Fees Revenue	13,343	46,564
	Osaka University Hospital Revenue	29,995	
	Miscellaneous	3,226	
University-Industry Cooperative Research Revenue			16,782
Long-Term Loan Revenue			1,419
Total			**130,177**

Expenditure

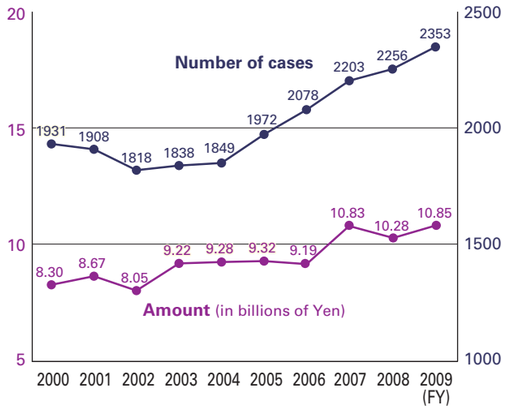
Administrative Affairs Expenses	Education and Research Expenses	63,226	90,893
	Hospital Examination Expenses	27,667	
Facility Maintenance Expenses			9,140
Subsidy Expenditure			7,800
University-Industry Cooperative Research Expenses and Endowment Project Expenses			16,782
Long-Term Loan Redemption Expenses			5,562
Total			**130,177**

Grants-in-Aid for Scientific Research (KAKENHI)

(FY 2009,in millions of Yen)

Categories			Number of Cases	Amount
Specially Promoted Research			5	908
Creative Scientific Research			4	450
Scientific Research in Priority Areas			188	1,558
Scientific Research on Innovative Areas	Research in a proposed research area		61	681
	Research under a proposed research project		10	105
Fundamental Researach		(S)	33	887
		(A)	108	1,426
		(B)	332	1,895
		(C)	486	718
Exploratory Research			155	220
Young Scientist		(S)	13	338
		(A)	50	445
		(B)	469	850
Young Scientist (start up)			83	115
JSPS Fellows			356	259
Total			**2,353**	**10,855**

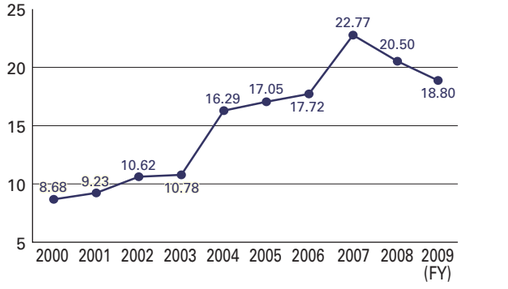
Transition of Grants-in-Aid for Scientific Research (KAKENHI) (Past 10 years)



Third-Party Funding (FY 2009, in millions of Yen)

Categories	Number of Cases	Amount
Joint Research	826	2,920
Commissioned Research	1,125	10,568
Donations for Research	4,050	5,317
Total	**6,001**	**18,805**

Transition of Third-Party Funding (Past 10 years, in billions of Yen)



Number of Students, Staff and Researchers

Number of Students (as of May 1, 2010)

( ) International Students

Regular Students Total	**23,789**	**(1,182)**
Non-Regular Students Total	**1,061**	**(426)**
Students Ground Total	**24,850**	**(1,608)**

Regular Students

Undergraduate Schools

Letters	787	(9)
Human Sciences	621	(9)
Foreign Studies	3,515	(48)
Law	1,040	(19)
Economics	1,058	(35)
Science	1,078	(11)
Medicine	1,327	(6)
Dentistry	386	(2)
Pharmaceutical Sciences	378	(7)
Engineering	3,726	(79)
Engineering Science	1,949	(21)
Undergraduate Students Total	**15,865**	**(246)**

Graduate Schools

	Doctor Course (5 years) Master Course	Doctor Course
Letters	158 (14)	245 (48)
Human Sciences	212 (21)	183 (17)
Law and Politics	82 (31)	38 (4)
Economics	161 (44)	85 (16)
Science	591 (22)	258 (27)
Medicine (Health Sciences)	159 (2)	91 (4)
Pharmaceutical Sciences	103 (5)	92 (4)
Engineering	1,700 (152)	507 (149)
Engineering Science	607 (47)	156 (37)
Language and Culture	194 (68)	133 (45)
International Public Policy	86 (26)	86 (21)
Information Science and Technology	291 (12)	111 (14)
Integrated Studies in Language and Society	8 (0)	25 (3)
United Graduate School of Child Development	—	25 (0)
Total	**4,352 (444)**	**2,035 (389)**

	Master Course(2 years)
Letters(Cultural Dynamics)	43 (3)
Pharmaceutical Sciences	88 (6)
Total	**131 (9)**

	Master Course (2 years)	Doctor Course (4 years)
Medicine	58 (3)	643 (68)
Dentistry	—	183 (8)
Total	**58 (3)**	**826 (76)**

	Doctor Course(5 years)
Frontier Biosciences	256 (14)
Total	**256 (14)**

	Law School (3 years)
Osaka University Law School	266 (1)
Total	**266 (1)**

	Master Course & Osaka University Law School	Doctor Course
Graduate Students Total	**4,807 (457)**	**3,117 (479)**

Number of Staff (as of May 1, 2010)

Full-Time Staff (total 5,584)

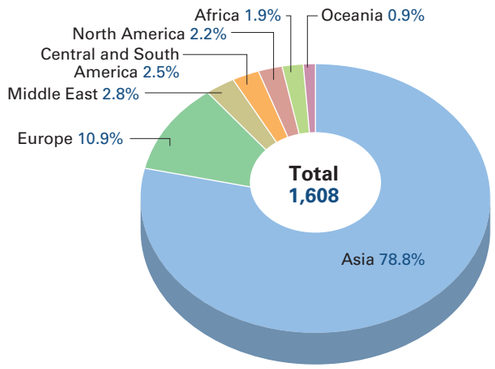
Professor	884
Associate Professor	806
Associate Professor (Lecturer)	203
Assistant Professor	1,069
Assistant and Others	16
Specially Appointed Researcher	128
Academic Staff	**3,106**
Administrative Staff	1,022
Technical Staff	287
Medical Staff	1,169
Non-Academic Staff	**2,478**

Part-Time Staff and Others (total 3,333)

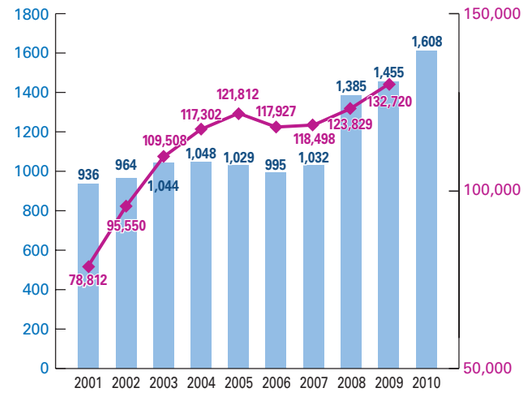
Academic Staff	828
Administrative Staff	1,380
Technical Staff	336
Medical Staff	747
Others	42

Number of International Students (as of May 1, 2010)

Asia	China	535	1,267
	Korea	252	
	Thailand	95	
	Indonesia	77	
	Vietnam	74	
	Others	234	
Europe			175
Middle East			46
Central and South America			40
North America			36
Africa			30
Oceania			14
Total			**1,608**

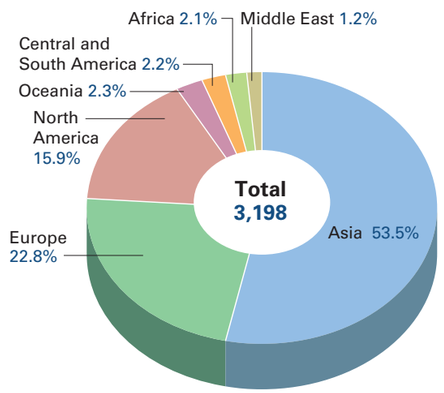


Transition of Number of International Students (as of May 1, Past 10 Years)



Number of Visiting International Researchers (FY2009)

Asia	China	476	1,712
	Korea	340	
	Thailand	259	
	Vietnam	182	
	Taiwan	156	
	Others	299	
Europe			729
North America			508
Oceania			73
Central and South America			71
Africa			66
Middle East			39
Total			**3,198**



Addresses

• International Student Affairs Division
Tel: +81-6-6879-7103 Fax: +81-6-6879-8964
E-mail: kenkyou-r@ml.office.osaka-u.ac.jp

• International Affairs Division
Tel: +81-6-6879-7037 Fax: +81-6-6879-7106
E-mail: kokusai-ina@ml.office.osaka-u.ac.jp

Suita Campus

Tel: +81-6-6877-5111 (Central)
Tel: +81-6-6879-5111 (Central for Faculty of Medicine/Osaka University Hospital/School of Dentistry/Osaka University Dental Hospital/United Graduate School of Child Development)

◎ Schools and Graduate Schools

Human Sciences
1-2 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-8010
E-mail: oie@hus.osaka-u.ac.jp

Medicine
2-2 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-3347
E-mail: jimu@office.med.osaka-u.ac.jp

(Division of Health Sciences)
1-7 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-2629
E-mail: kouhou@sahs.med.osaka-u.ac.jp

(Osaka University Hospital)
2-15 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-5019

Dentistry
1-8 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-2832
E-mail: si-soumu-kyomu@office.osaka-u.ac.jp

(Osaka University Dental Hospital)
1-8 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-2861

Pharmaceutical Sciences
1-6 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-8154
E-mail: yakugaku-kyomu@office.osaka-u.ac.jp

Engineering
2-1 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-7229
E-mail: iso-staff@eng.osaka-u.ac.jp

Information Science and Technology
1-5 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-4570
E-mail: office@ist.osaka-u.ac.jp

Frontier Biosciences
1-3 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-4420
E-mail: seimei-daigakuin@office.osaka-u.ac.jp

United Graduate School of Child Development, Osaka University, Kanazawa University and Hamamatsu University School of Medicine
2-2 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-3347
E-mail: office@ugscd.osaka-u.ac.jp

◎ Research Institutes

Research Institute for Microbial Diseases
3-1 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-8266
E-mail: biken-kenkyo@office.osaka-u.ac.jp

Institute of Scientific and Industrial Research
8-1 Mihogaoka, Ibaraki, Osaka 567-0047
Fax: +81-6-6879-8509
E-mail: kouhou@sanken.osaka-u.ac.jp

Institute for Protein Research
3-2 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-8590
E-mail: tanpakuken-kyoudo@office.osaka-u.ac.jp

Institute of Social and Economic Research
6-1 Mihogaoka, Ibaraki, Osaka 567-0047
Fax: +81-6-6879-8583
E-mail: shomu@iser.osaka-u.ac.jp

Joining and Welding Research Institute
11-1 Mihogaoka, Ibaraki, Osaka 567-0047
Fax: +81-6-6879-8689
E-mail: setugouken-syomu@office.osaka-u.ac.jp

◎ Joint-Use Facilities & National Joint-Use Facilities

Research Center for Nuclear Physics
10-1 Mihogaoka, Ibaraki, Osaka 567-0047
Fax: +81-6-6879-8899
E-mail: director@rcnp.osaka-u.ac.jp

Cybermedia Center
5-1 Mihogaoka, Ibaraki, Osaka 567-0047
Fax: +81-6-6879-8814
E-mail: zyosui-kikaku-soumu@office.osaka-u.ac.jp

Institute of Laser Engineering
2-6 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6876-4110
E-mail: rezaken-syomu@office.osaka-u.ac.jp

Low Temperature Center
2-1 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-7986

Research Center for Ultra-High Voltage Electron Microscopy
7-1 Mihogaoka, Ibaraki, Osaka 567-0047
Fax: +81-6-6879-7942

Radioisotope Research Center
2-4 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-8825

Research Center for Environmental Preservation
2-4 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-8978
E-mail:hozen@epc.osaka-u.ac.jp

Center for International Education and Exchange
1-1 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-8964
E-mail: kokusai-gakusei-ryugakusei@office.osaka-u.ac.jp

International Center for Biotechnology
2-1 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-7454
E-mail: info@icb.osaka-u.ac.jp

Center for Advanced Science and Innovation
2-1 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-7796
E-mail: contact@casi.osaka-u.ac.jp

Health Care Center
2-1 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-4088
E-mail: hoken-kanri@office.osaka-u.ac.jp

The Center for Advanced Medical Engineering and Informatics
2-15 Yamadaoka, Suita, Osaka 565-0871
Fax : +81-6-6879-6567
E-mail : mei-sec@mei.osaka-u.ac.jp

Global Collaboration Center
2-7 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-4444
E-mail: jimu@glocol.osaka-u.ac.jp

The Center of Environmental Innovation Design for Sustainability
1-2 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6875-6271
E-mail: sdc-jim@sdc.osaka-u.ac.jp

◎ WPI Immunology Frontier Research Center

3-1 Yamadaoka, Suita, Osaka 565-0871
Fax: +81-6-6879-4272
E-mail: ifrec-office@ifrec.osaka-u.ac.jp

Toyonaka Campus

Tel: +81-6-6850-6111 (Central)

◎ Main Library

1-4 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-5052
E-mail: honkan@library.osaka-u.ac.jp

◎ Schools and Graduate Schools

Letters
1-5 Machikaneyama-cho, Toyonaka, Osaka 560-8532
Fax: +81-6-6850-5087
E-mail: bunsouhaku-kyoumu@office.osaka-u.ac.jp

Law / Law and Politics
1-6 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-5089
E-mail: houkyoumu@law.osaka-u.ac.jp

Economics
1-7 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-5212
E-mail: kyoumu@econ.osaka-u.ac.jp
E-mail: keikoku-keizaikyoumu@office.osaka-u.ac.jp

Science
1-1 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-6777
E-mail: ri-gakuseikokusai@office.osaka-u.ac.jp

Engineering Science
1-3 Machikaneyama-cho, Toyonaka, Osaka 560-8531
Fax: +81-6-6850-6145
E-mail: ki-kyomu@office.osaka-u.ac.jp
E-mail: ki-daigakuin@office.osaka-u.ac.jp

Language and Culture
1-8 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-5865
E-mail: genbun-daigakuin@office.osaka-u.ac.jp

International Public Policy
1-31 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-5600
E-mail: kyomu@osipp.osaka-u.ac.jp

Law School
1-6 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-6947
E-mail: kousikyoumu@lawschool.osaka-u.ac.jp

◎ Joint-Use Facilities

Center for Quantum Science and Technology under Extreme Conditions
1-3 Machikaneyama-cho, Toyonaka, Osaka 560-8531
Fax: +81-6-6850-6662

Research Center for Solar Energy Chemistry
1-3 Machikaneyama-cho, Toyonaka, Osaka 560-8531
Fax: +81-6-6850-6699

Museum of Osaka University
1-20 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-6049

Institute for Higher Education Research and Practice
1-16 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-5613
E-mail: daikyosen-soumu@office.osaka-u.ac.jp

Health Care Center
1-17 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-6040
E-mail: hoken-kanri@office.osaka-u.ac.jp

Center for the Study of Finance and Insurance
1-3 Machikaneyama-cho, Toyonaka, Osaka 560-8531
Fax: +81-6-6850-6092
E-mail: csfi-jim@sigmath.es.osaka-u.ac.jp

Renovation Center of Instruments for Science Education and Technology
1-2 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-6052

Center for the Study of Communication-Design
1-16 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax : +81-6-4865-0121
E-mail: cscd@office.osaka-u.ac.jp

Institute for NanoScience Design
1-3 Machikaneyama-cho, Toyonaka, Osaka 560-8531
Fax: +81-6-6850-6398

Intellectual Property Center (IPrism)
1-6 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-6593
E-mail: ipjim@iprism.osaka-u.ac.jp

◎ Center for Interdisciplinary Research and Education

1-16 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-6099
E-mail: gakusei-gakusaiyuugou@office.osaka-u.ac.jp

◎ Kaitokudo for the 21st Century

1-16 Machikaneyama-cho, Toyonaka, Osaka 560-0043
Fax: +81-6-6850-6449
E-mail: info@21c-kaitokudo.osaka-u.ac.jp

Minoh Campus

Tel: +81-72-730-5111 (Central)

◎ Schools and Graduate Schools

Foreign Studies
8-1-1 Aomatani-higashi, Minoh, Osaka 562-8558
Fax: +81-72-730-5057
E-mail: gaikokugo-kyomu@office.osaka-u.ac.jp

Language and Culture (Studies in Language and Society)
8-1-1 Aomatani-higashi, Minoh, Osaka 562-8558
Fax: +81-72-730-5067
E-mail: genbun-syakai@office.osaka-u.ac.jp

◎ Joint-Use Facilities

Health Care Center
8-1-1 Aomatani-higashi, Minoh, Osaka 562-8558
Fax: +81-72-730-5153
E-mail: hoken-kanri@office.osaka-u.ac.jp

Research Institute for World Languages
8-1-1 Aomatani-higashi, Minoh, Osaka 562-8558
Fax: +81-72-730-5009
E-mail: riwl0g7s@world-lang.osaka-u.ac.jp

Center for Japanese Language and Culture
8-1-1 Aomatani-higashi, Minoh, Osaka 562-8558
Fax: +81-72-730-5074
E-mail: kouryu@cjlc.osaka-u.ac.jp

Nakanoshima Area

■Osaka University Nakanoshima Center

4-3-53 Nakanoshima, kita-ku, Osaka 530-0005
Tel: +81-6-6444-2100 Fax: +81-6-6444-2338
E-mail: office@onc.osaka-u.ac.jp
URL: www.onc.osaka-u.ac.jp

Osaka University Overseas Centers

■San Francisco Center for Education and Research

100 Montgomery St., Suite 1270, San Francisco, CA 94104, USA
Tel: +1-415-296-8561 Fax: +1-415-296-8676
E-mail: info@osaka-u-sf.org

■Groningen Center for Education and Research

Zernikelaan 6, 9747 AA Groningen, The Netherlands
Tel: +31-50-363-8865 Fax: +31-50-363-8866
E-mail: info@osaka-u-groningen.org

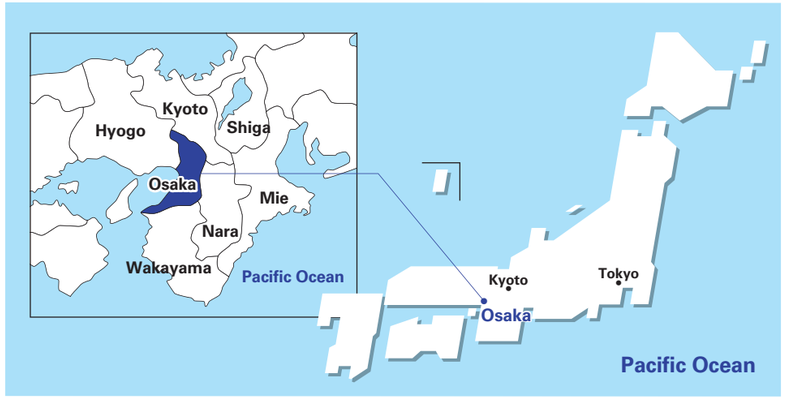
■Bangkok Center for Education and Research

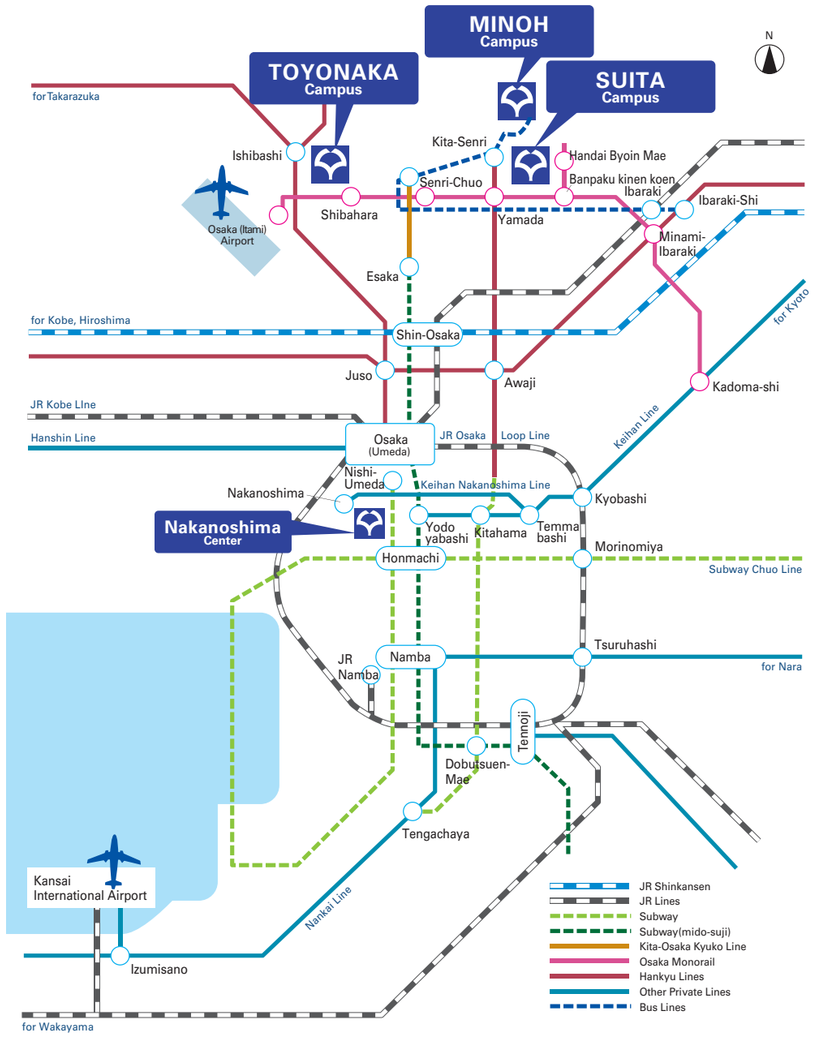
159 Serm-Mit Tower, 10th Fl., Room C, Sukhumvit(21)Rd.,
Klongtoey-Nua, Wattana, Bangkok, 10110 Thailand
Tel: +66-2-661-7584 Fax: +66-2-661-7585
E-mail: admin-bkk@hpc.cmc.osaka-u.ac.jp

■Shanghai Center for Education and Research

Room D 22F Sun Tong Infoport Plaza, No55, Huai Hai West Road,
Shanghai City 200030, China
Tel: +86-21-6115-2001 Fax: +86-21-6115-2003
E-mail: shanghai-ina@ml.office.osaka-u.ac.jp

Campus Locations and Transportation





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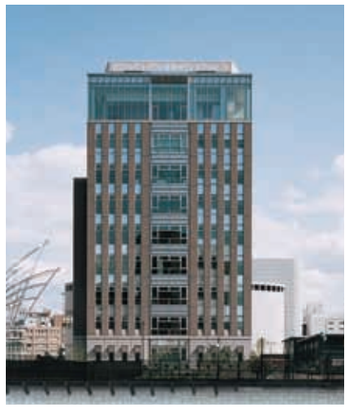

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