Study in English at OSAKA CITY UNIVERSITY

International Course of Graduate School of Science

2019 Edition

Graduate School of Science

OSAKA CITY UNIVERSITY

International Course of the Graduate School of Science

Osaka City University Graduate School of Science provides courses in English; Japanese is not mandatory to obtain a degree. This allows you to obtain a master's or doctoral degree in English. You can take entrance examinations, lectures, seminars, research guidance, and degree examination in English. Students of this course will belong to one of the following three divisions.

- Mathematics & Physics,
- Molecular Material Science,
- Biology & Geoscience.

Web site: http://www.sci.osaka-cu.ac.jp/i-course/

Welcome from the Dean

The Graduate School of Science is one of the graduate schools that established doctoral programs, at an early stage in Japan, covering almost every field of science. It is one of the leading centers for education and research in Japan. The Graduate School of Science leads the world in a large number of quality studies, as exemplified by Yoichiro Nambu winning the 2008 Nobel Prize in Physics. Globalization is currently essential in various fields, but scientific study of the principles of nature is a global discipline without borders. The results of research conducted here have been published in many international academic journals. Each year, approximately 100 instructors as well as students are sent overseas to conduct experiments, investigations, and make presentations at international conferences. Scientific research involves participation in international activities and helps students develop a global perspective.

The world is currently in a state of instability and flux, making it difficult to foresee the future. In this age of rapid change, which demands the ability to adapt to changing circumstances quickly, the Faculty of Science is enthusiastically involved in various initiatives to lead the way rather than lagging behind the times. We must also not forget that natural sciences have supported the development of mankind for millennia. In this age of deepening confusion, we hope to maintain the dignity of the Faculty of Science in its quest to learn the truth without being swept away by ephemeral trends and superficial reform.

Mathematics & Physics

We study and develop mathematics and physics, as well as their interface, to develop a deeper understanding of nature.

The Division of Mathematics & Physics has five courses: (1) Mathematical Structures, (2) Mathematical Analysis, (3) Fundamental Physics, (4) Astro- and High-Energy Physics, and (5) Condensed-Matter Physics. About 50 academic staff belong to this division and provide advanced education to graduate students. Students can experience their research lives at the forefront of modern mathematics and physics in these divisions in an environment that is excellent for fostering scientists.

The fluorescence telescopes of The Telescope Array, the world's largest cosmic ray detector in the northern hemisphere. Fluorescence photons, a faint UV emission from air molecules, are detected when a cosmic ray strikes the atmosphere within the area of 700 km^2 around the telescopes.

The Physics Department has a unique double-stage nuclear adiabatic demagnetization cryostat which is one of the very rare refrigerators in the world. It can achieve absolute temperatures below 0.01 mK and has been used to study superfluidity.

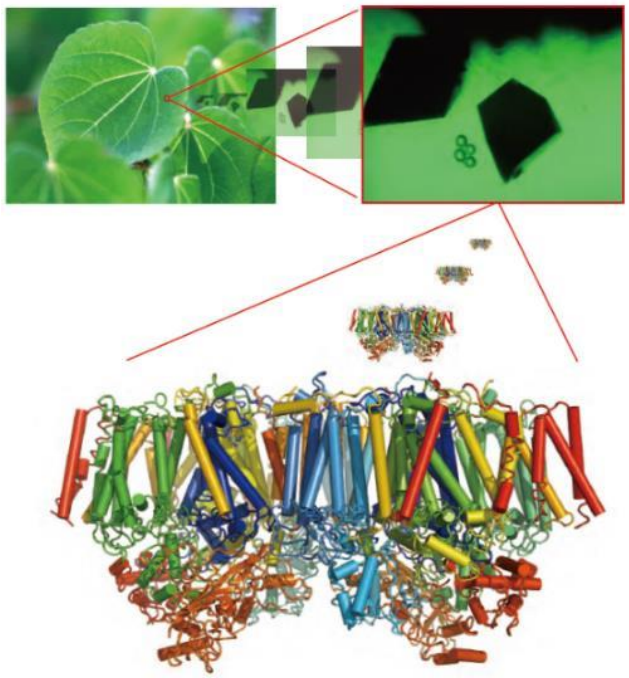
Courses & Research groups

Mathematical Structures (Algebra, Representation Theory, Manifold Theory, Topology)
Mathematical Analysis (Real and Complex Analysis, Probability Theory, Applied Mathematics, Partial Differential Equation, Algebraic Analysis, Differential Geometry)
Fundamental Physics (Particle Physics, Nuclear Theory, Gravitation and Astrophysics, Mathematical Physics)
Astro and High Energy Physics (Cosmic Ray Physics, High Energy Physics, Cosmic & Experimental Particle Physics, Gravitational Wave Physics and Astrophysics)
Condensed-Matter Physics (Ultra Low Temperature, Physics of Photophysical Properties, Physics of Biological Material and Crystal Growth, Elementary Excitation Physics, Strongly Correlated Electron System, Ultracold Quantum Gas)

Molecular Materials Science

Nowadays, we are facing the disappearance of a conventional boundary in the field of natural science and the rapid development of new fields in the advanced research area. In the field of chemistry, the science of materials, it is astonishing that the advanced knowledge is stored day by day and new interdisciplinary fields are developing rapidly. To adapt to this situation, we have established the Division of Molecular Materials Science consisting of two fields of study: Creative Molecular Science and Functional Molecular Science. Our education is aimed at understanding the diverse phenomena of materials systematically, disclosing the roles of biological materials at the molecular level, and developing novel materials with advanced functions.

In this division, 32 faculty members teach advanced scientific research in a one-to-one manner in an open, free, and international atmosphere. Many of the undergraduate students enter the master's course after their graduation and one-fifth of the graduate students go on to pursue a doctoral degree after they complete the master's course. They are studying higher level knowledge in molecular materials science and devote themselves to advanced research. Students who have made excellent research achievements can shorten the completion term to graduate by one to two years. We have been producing a large number of graduates who have a high level of expertise, a broad scientific perspective, and experience for the achievement of future innovations. They are leading research activities in universities, public institutes, and companies.



Three-dimensional structure of a protein complex (Photosystem II). This complex is responsible for photosynthetic water splitting for the evolution of molecular oxygen that is occupying 20% of the earth's atmosphere.

Courses & Research groups

Creative Molecular Science (Laser Chemistry, Quantum Functionality Materials, Hybrid Molecular Chemistry, Advanced Analytical Chemistry, Molecular Materials Chemistry, Molecular Physical Chemistry, Fine Organic Chemistry, Bio-functional Molecular Design)

Functional Molecular Science (Organic Reaction Chemistry, Function Chemistry, Molecular Conversion, Synthetic Organic Chemistry, Biological Structural Chemistry)

Biology & Geosciences

In the Division of Biology & Geosciences, we aim to systematize new disciplines that cross the two fields centering on the global environment in the development of Biology and Geosciences. Biology is a discipline for understanding the essence of life. We aim to elucidate biological phenomena in a wide range of fields, from molecules, cells, individuals, and ecosystems to the global level. Geosciences are aimed at deciphering the history of the earth as a complex system that has changed repeatedly in order to recognize the realities of the Earth from the past to the present and to build the knowledge and technology necessary to predict its future.

Our division consists of five courses, (1) Science of Biomolecules, (2) Functional Biosciences, (3) Functional Biology of Natural History, (4) Environmental Geosciences, and (5) Earth Evolution Sciences. We aim to nurture experts of Biology and Geosciences who can analyze evolution and the life of living organisms, including humans, based on the current environment and the history of the Earth, and apply the results to environmental problems.

left: African cichlid (*Tropheus moorii*) appealing their territory in Lake Tanganyika.
right: Kayoso Fold at Nago City, Okinawa (a natural monument)

Courses & Research groups

Science of Biomolecules (Functional Biopolymer Science, Functional Biological Low Molecule Science, Functional Metabolic Regulation Science)

Functional Biosciences (Functional Cellular Biology, Functional Plant Biology, Functional Animal Biology

Functional Biology of Natural History (Plant Evolution & Adaptation, Informatic Biology, Functional Plant Ecology, Functional Animal Ecology)

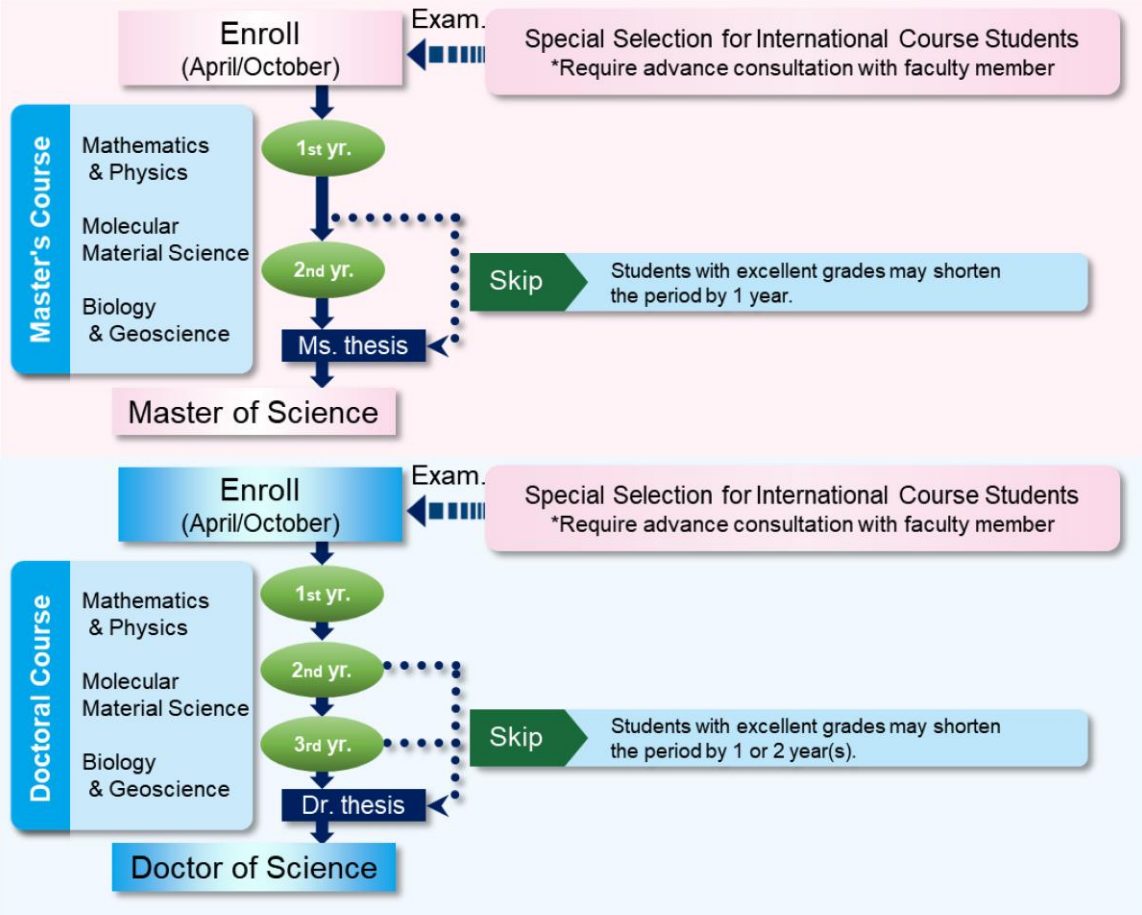
Environmental Geosciences (Geological Informatics, Urban Geosciences, Natural History of Anthropogene)

Earth Evolution Sciences (Geohistory, Petrology, Mineralogy & Geochemistry)

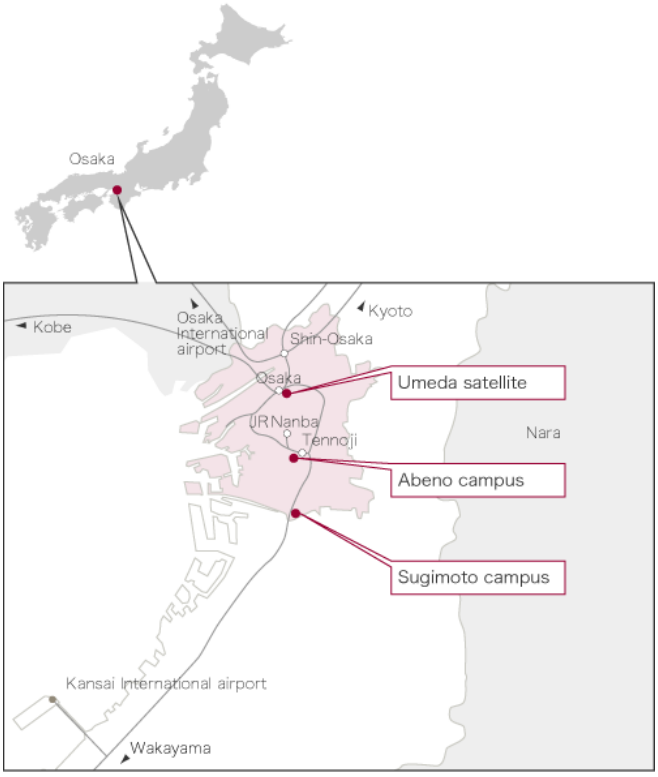
Botanical Gardens

The Botanical Gardens were established in 1950. About 450 species of native Japanese trees were planted to replicate 11 major forest types in Japan. Other important collections include exotic trees, bamboos, aquatic plants around Osaka, and tropical/subtropical plants. The collections are provided as study material for Japanese and foreign scientists.

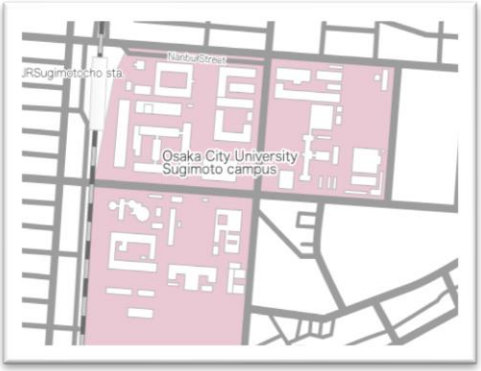
Entrance & Education Course



Location & Contact Information



Sugimoto campus



Address
3-3-138 Sugimoto Sumiyoshi-ku, Osaka-shi, 558-8585, JAPAN

Access by Public Transport
5 min. walk from Sugimoto-cho Station (JR Hanwa Line).
20 min.walk from Abiko Station (Subway Midosuji Line).

Access from the Main Terminals

From Kansai International Airport (KIX) :
Take the Kansai-Airport Rapid Service, change at Sakai-shi to a local train for Tennoji and get off at Sugimoto-cho Station.

From Shin-Osaka Station :
Take the subway Midosuji Line and get off at Abiko Station.

From Osaka International Airport (Itami) :
Take an Airport Limousine Bus to Abenobashi Station, then take a local train on the JR Hanwa Line from JR Tennoji Station and get off at Sugimoto-cho Station.

International Course HP: http://www.sci.osaka-cu.ac.jp/i-course/
International Course Examination Office: sci-i-course@ado.osaka-cu.ac.jp