KYOTO UNIVERSITY
Graduate School of Engineering and Faculty of Engineering 2023

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2023

Edit and issue

Public Relations Committee, and General Affairs Division
Graduate School of Engineering,Kyoto Univ.
Kyoto Daigaku-Katsura, Nishikyo-ku, Kyoto 615-8530
https://www.t.kyoto-u.ac.jp/en
Published in August 2023

Official Website

京都大学
KYOTO UNIVERSITY

CONTENTS

1 Philosophy and Vision of Kyoto University Engineering

Kyoto University's mission statement calls for sustaining and developing the historical commitment to academic freedom as well as pursuing harmonious coexistence within the global community. To achieve these goals, Kyoto University Graduate School of Engineering and Faculty of Engineering (Kyoto University Engineering) has expressed the following philosophy and vision.

Philosophy and Objectives of Kyoto University Engineering

Philosophy

The pursuit of the truth is the essence of learning.
Contained therein is the notion that engineering encompasses all fields of science that make direct or indirect contributions to the lives of people and essentially plays a significant role in the ongoing advancement of the global community and in the progress of civilization. The Graduate School of Engineering and the Faculty of Engineering at Kyoto University, in accordance with the above understanding, is committed to the development of science and technology in harmony with the natural environment, with an emphasis on academic fundamentals and basic principles , as well as to the provision of an education that combines a focus on the attainment of outstanding professional skills and high standards of morality with a balanced approach to acquiring a solid liberal arts education and sense of individuality. In engaging in such research and education, we are mindful of the need to promote ties with local communities and encourage international exchanges. We shall operate the Graduate School and the Faculty based on respect for both the autonomy of the various research and educational bodies under our jurisdiction and the human rights of each person and will respond to the need to be socially accountable with as much effort as we can at all times summon.

Objectives

The Graduate School of Engineering and the Faculty of Engineering consider the nature of engineering and their mission as academic organizations to be as follows.
The mission of the Graduate School of Engineering and Faculty of Engineering is to achieve the abovementioned philosophy while continuing the tradition of an open academic culture that respects the independence of individual members. More specifically, we aim to create and inherit knowledge and technologies derived from free and open-minded intellectual activities.

Vision of Kyoto Univeristy Engineering

Integrate basic and applied research, develop the ability to think clearly by learning through research, and remain committed to taking responsibility for the global community

Research at Kyoto Univeristy Engineering

Integrating basic and applied research

Our basic research is intended to deepen the understanding of scientific knowledge by combining experimental studies and mathematical analysis. On the other hand, applied research aims to solve practical problems by applying scientific knowledge. Our tradition at Kyoto Univeristy Engineering is to promote research that integrates basic and applied research. Having them complement each other, like the two wheels of a cart, we aim to create scientific technologies that can enable a novel way of manufacturing as well as those that help to bring about a sustainable global community.

Learning at Kyoto University Engineering

Developing the ability to think clearly by learning through research

University-based research is the attempt to do new things. Based on research findings to date, students are expected to set their own research topics and to find their own solutions. Learning at Kyoto University Engineering is about developing the ability to think as well as to educate yourself by learning through research. From time to time you will encounter difficulties. When that happens you can talk to your fellow students and faculty members, obtain new perspectives or insights from them, and develop your ability to think carefully and solve problems. Kyoto University Engineering is where you can do just that.

Mission of Kyoto University Engineering

Remaining committed to taking responsibility for the continuous development of the global community

The purposes of engineering are to advance science and technology, to support people' s lives, and help build an affluent society by sharing the benefits of science and technology. To enable the continuous progress of the global community, it is necessary to develop technologies that can address the various threats to our lives and society and help solve the problems surrounding us. We will continue to map a vision of our future, contribute to the continuous progress of the global community, and remain committed to taking responsibility for the sustainability of the global community.

立川康人
Yasuto Tachikawa
Dean of the Graduate School and Faculty of Engineering
(Professor, Civil and Earth Resources Engineering)

2 History

Kyoto Imperial University was founded on June 18, 1897, and Kyoto University began as the College of Science and Engineering (the predecessor of the College of Science and Engineering). In this sense, the history of Kyoto University is also the history of the Faculty of Engineering. This section looks back on the past and present of Kyoto University's School of Engineering, focusing on the changes in departments and majors.





Kyoto Imperial University established
College of Science and Engineering established — 1897 Civil Engineering and Mechanical Engineering courses established
1898 Electrical Engineering, Mining and Metallurgy, and Manufacturing Science & Technology courses established
1914 College of Science and Engineering divided into College of Science and College of Engineering.
Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining & Metallurgy and Industrial Chemistry courses established
1919 College of Engineering became Faculty of Engineering
1920 Architecture & Architectural Engineering course established

1939 Fuel Chemistry course established
1940 Chemical Engineering course established
1941 Textile Chemistry course established
1942 Mining & Metallurgy course divided into Mining and Metallurgy course.Aeronautical Engineering course established
1946 Aeronautical Engineering course abolished, Applied Physics course established
Kyoto Imperial University changed it's name to Kyoto University — 1947
1949
Launch of the new Kyoto University
1953 Graduate School of Engineering established
1954 Electronic Science & Engineering course established
1955 Applied Physics course renamed Aeronautical Engineering course
1957 Department of Nuclear Engineering established
1958 Nuclear Engineering, and Environmental & Sanitary Engineering courses established
1959 Applied Mathematics & Physics course established
1960 Precision Mechanics and Synthetic Chemistry courses established
1961 Electrical Engineering II course and Metal Science & Technology course established.Reorganized/renamed Textile Chemistry course to Polymer Chemistry course.Reorganized Chemical Engineering course
1962 Mechanical Engineering II course established
1963 Transportation Engineering course established
1964 Architecture & Architectural Engineering II courses established and Mining course renamed Mineral Science & Technology course
1966 Reorganized /renamed Fuel Chemistry course to Hydrocarbon Chemistry course

1970 Information Science course established
1975 Mechanical Engineering II course rearranged and renamed to Physical Engineering course

1983 Department of Molecular Engineering established
1987 Department of Applied Systems Science established
1991 Department of Global Environment Engineering established
1993 Reorganization of Chemical Science and Technology system
1994 Reorganization of Engineering Science system
1995 Reorganization of Electrical and Electronic Engineering system .
Reorganization two undergraduate courses (Applied Mathematics & Physics, and Information Science) into Informatics & Mathematical Science
Completed prioritization of graduate school — 1996 Reorganization of Civil, Environmental and Resources Engineering system and Architecture and Architectural Engineering system

Katsura Campus established — 2003 Reorganization of Civil, Environmental and Resources Engineering system and Architecture and Architectural Engineering system.
Renaming of Electrical and Electronic Engineering system.Electrical and Electronic Engineering system and Chemical Science and Technology system moved to A Cluster
2004 Architecture and Architectural Engineering system moved to C Cluster in Katsura Campus
2005 Reorganized of Engineering Science system
2006 Civil, Environmental and Resources Engineering system moved to C Cluster in Katsura Campus

2013 Engineering Science system moved to C Cluster

Katsura Library established — 2020

Civil, Environmental and Resources Engineering system

Faculty of Engineering:
Undergraduate School of Civil, Environmental and Resources Engineering

Graduate School of Engineering:
Department of Civil and Earth Resources Engineering
Department of Urban Management
Department of Environmental Engineering

Architecture and Architectural Engineering system

Faculty of Engineering:
Undergraduate School of Architecture

Graduate School of Engineering:
Department of Architecture and Architectural Engineering

Engineering Science system

Faculty of Engineering:
Undergraduate School of Engineering Science

Graduate School of Engineering:
Department of Mechanical Engineering and Science
Department of Micro Engineering
Department of Aeronautics and Astronautics
Department of Nuclear Engineering
Department of Materials Science and Engineering

Electrical and Electronic Engineering system

Faculty of Engineering:
Undergraduate School of Electrical and Electronic Engineering

Graduate School of Engineering:
Department of Electrical Engineering
Department of Electronic Science and Engineering

Chemical Science and Technology system

Faculty of Engineering:
Undergraduate School of Chemical Science and Technology

Graduate School of Engineering:
Department of Material Chemistry
Department of Energy and Hydrocarbon Chemistry
Department of Molecular Engineering
Department of Polymer Chemistry
Department of Synthetic Chemistry and Biological Chemistry
Department of Chemical Engineering

Establishment of the related Graduate Schools

1996 Graduate School of Energy Science
1998 Graduate Schools of Informatics
2002 Graduate Schools of Global Environmental Studies

Nobel laureates produced by the Graduate School of Engineering

1981 Chemistry Kenichi Fukui (Professor Emeritus)
2001 Chemistry Ryoji Noyori (alumni)
2019 Chemistry Akira Yoshino (alumni)

For a detailed chronology, read more

3 Organization

Kyoto University Engineering has the largest number of Undergraduate Schools and Departments in the University.

(As of April 1, 2023)

(As of April 1, 2023)

Administration Office (Graduate School of Engineering), Katsura Campus

General Affairs Division	Financial Management Division	Accounting Division	Educational Affairs Division	Promotion of Science and Technology Division
General Affairs Section	Financial Affairs Section	Contract Section	Undergraduate Student Section	Research and International Affairs Section
Planning and Public Relations Section	Financial Analysis and Evaluation Section	University Budget and Donation Fund Section	Graduate Student Section	Industry Academia Exchange Section
Personnel Affairs Section	Environment Management Section	Travel Expense and Honorarium Section	Foreign Student Section	Industry Academia Cooperation Section
Academic Information Section	Facility Management Section		Graduate Student Section, A Cluster Office	Governmental Research Grant Section
User Support Section			Graduate Student Section, C Cluster Office	Research Facility Support Section
General Affairs Section, A Cluster Office				
General Affairs Section, C Cluster Office				

(As of April 1, 2023)

Faculty of Engineering — Chairperson of Undergraduate School	Graduate School of Engineering — Chairperson of Department	
Undergraduate School of Civil, Environmental and Resources Engineering — Mamoru Mabuchi	Department of Civil and Earth Resources Engineering	Junichi Susaki
	Department of Urban Management	Nobuhiro Uno
	Department of Environmental Engineering	Masaki Takaoka
Undergraduate School of Architecture — Akihisa Hirata	Department of Architecture and Architectural Engineering	Kazunori Harada
Undergraduate School of Engineering Science — Hideshi Hanazaki	Department of Mechanical Engineering and Science	Takahiro Shimada
	Department of Micro Engineering	Kazuhiro Izui
	Department of Aeronautics and Astronautics	Taku Ohwada
	Department of Nuclear Engineering	Takayuki Miyadera
	Department of Materials Science and Engineering	Kuniaki Murase
Undergraduate School of Electrical and Electronic Engineering — Tetsuji Matsuo	Department of Electrical Engineering	Takuya Sakamoto
	Department of Electronic Science and Engineering	Susumu Noda
Undergraduate School of Informatics and Mathematical Science — Kazuyuki Yagasaki		
Undergraduate School of Chemical Science and Technology — Shu Seki	Department of Material Chemistry	Kenji Urayama
	Department of Energy and Hydrocarbon Chemistry	Tetsuaki Fujihara
	Department of Molecular Engineering	Hirofumi Sato
	Department of Polymer Chemistry	Kazunori Sugiyasu
	Department of Synthetic Chemistry and Biological Chemistry	Hiroaki Miki
	Department of Chemical Engineering	Noriaki Sano

(As of April 1, 2023)

Research and Educational Facilities and Centers	Director
Photonics and Electronics Science and Engineering Center	Susumu Noda
Research Center for Environmental Quality Management	Sadahiko Itoh
Quantum Science and Engineering Center	Ikuji Takagi
Katsura Int't'ech Center	Takehiko Yokomine
Center for Information Technology	Sadayoshi Murakami
Occupational Health, Safety and Environmental Management Center	Kenji Matsuda
Engineering Education Research Center	Takeshi Abe
Research Administration Center	Takehiko Yokomine
Interdisciplinary Research Institute for the Next Generation	Takehiko Yokomine


Faceplate of Katsura Campus

Read more

4 Undergraduate Schools of the Faculty of Engineering

Civil, Environmental and Resources Engineering

Rational Development and Conservation of the Earth

Civil, Environmental and Resources Engineering include the various technological divisions and their integrated fields that focus on the resources and energy essential for civilization, as well as advancements in infrastructure that sustainably support society and the maintenance of an environment essential for people to coexist with nature. Based on the think globally and act locally philosophy, this school provides an education that cultivates insight into a comprehensive understanding of a wide range of science and technology. The courses foster ability through advanced research and practical work that encourages rational development as well as the conservation of the planet and the sustainable development of humankind. Also offered is an international course where all lectures are given in English, essential for developing globally minded engineers.

Read more

Architecture

The Pursuit of Human Technologies

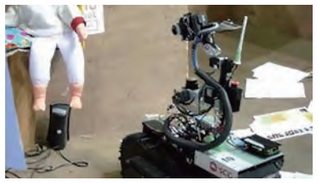
Architecture—the way we shape our living environment and the foundation for developing a safe, healthy, and comfortable life—is created by combining diverse technologies. Architecture is considered the technology that is most deeply rooted in all facets of human existence. The Undergraduate School of Architecture welcomes students with a strong interest in the humanities, social sciences, and arts, as well as the natural sciences, helping them to develop their talents. Graduates have gone on to become architects, structural engineers, architectural administration officers, university and corporate researchers, consultants, and planners, among other professions.

Read more

Engineering Science

Cultivating Human Resources for the Creation of New Technologies

The field of engineering science is expected to help resolve issues for traveling in outer space as well as the development of new systems, materials, and energy sources for the 21st century and beyond. To create novel technologies that can meet these needs, the Undergraduate School of Engineering Science provides an education and conducts research that emphasizes the need to gain a firm grasp of the fundamentals. In addition, the five courses—Mechanical and Systems Engineering, Materials Science, Aeronautics and Astronautics, Nuclear Engineering, and Applied Energy Science and Engineering—work together to equip students with a high level of professional competence and a broad perspective.



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Electrical and Electronic Engineering

Science and Technology Supporting Industry and Living Infrastructure

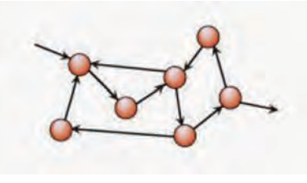
Electrical and electronic engineering not only supports the science and technology essential for industries and the social infrastructure in modern society, it also plays an important role in enriching the 21st century. For this reason, the Undergraduate School of Electrical and Electronic Engineering nurtures individuals with comprehensive knowledge spanning a wide range of fields, a high level of expertise, a multifaceted perspective, exceptional originality, and high ethical standards. The curriculum includes the fundamentals, followed by specialized courses based on the student's own goals. Through these four years of study, students acquire the knowledge and skills necessary to contribute to the advancement of electrical and electronic engineering, while getting a thorough understanding of cutting-edge science and technology.

Read more

Informatics and Mathematical Science

Solving Complex System Problems

Advances in today's information-oriented society have elevated the need to analyze mathematical models that appear in diverse fields, as well as to analyze and use the vast quantities of big data collected by complex information systems. For this reason, it is important to have the mental capacity to investigate not only the function of the system, but also the nature of the "information" that flows through it, and to use that information to create efficient designs. In the Undergraduate School of Informatics and Mathematical Science, students learn to use a mathematical approach to solve real-world problems involving complex systems, as well as to design and use computer hardware, systems software, and information systems.



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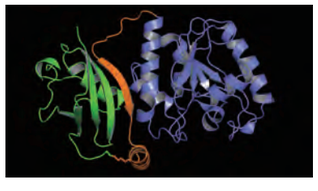
Chemical Science and Technology

Serving as the Foundation for Cutting-Edge Science and Technology

Chemistry is the study of reactions and processes that create various substances, as well as the functions and physical properties of substances. In order to create a sustainable society, the Undergraduate School of Chemical Science and Technology promotes the development of a creative form of basic and advanced technologies and research in interdisciplinary fields for industries that must respond to issues on a global scale. The school provides an education with an emphasis on basic chemistry and engineering in a wide range of chemistry-related fields, and cultivates researchers and engineers who can be active in the chemical fields that support carbon neutrality, such as energy generation, effective manufacturing, and electricity storage.



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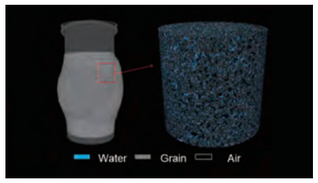
5 Departments of the Graduate School of Engineering

Civil and Earth Resources Engineering

Technological innovation that targets areas where people operate and the social infrastructure is a must for opening up new industries and cultures, harmonizing with the environment, and creating a sustainable society that is safe, secure, and vibrant.
The Department of Civil and Earth Resources Engineering contributes to the development of science and technology to support the growth of the social infrastructure. This Department emphasizes cutting-edge technologies; the realization of safe, secure, and environmentally harmonious social infrastructure; and the sustainable use of underground resources. The Department accomplishes these tasks by focusing on a thorough understanding of global environmental and energy issues, and by equipping students with the fundamental engineering skills needed to pioneer new technologies from an international and multilayered perspective. We also equip students with the skills they need to solve real-world problems.



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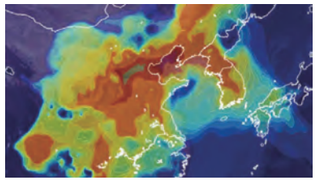
Urban Management

The Department of Urban Management strives to integrate technologies for advanced information and communications as well as social and energy infrastructure to help create an urban social system that can deliver an advanced and abundant quality of life. Specifically, the Department aims to establish the methodology and techniques for analyzing urban activities such as urban engineering, traffic engineering, logistics engineering, and earth resource engineering; urban and transportation planning; upgrading social infrastructures related to lifelines, ground, rivers, etc. to realize safe and sustainable urban systems; and for establishing a new theory of urban energy resources under the concepts of urban governance and urban infrastructure management. The Department also aims to establish the methodology and techniques for comprehensive management of urban systems, including sustainability assessments.

Read more

Environmental Engineering

Global environmental issues, such as climate change, show that the evolution of humanity, once advanced by science, has reached its limitations on a global scale. In addition, there are still societies that have rapidly growing populations and unmet needs for human security, while others are fazed by an aging population and diversifying values. The Department of Environmental Engineering, in response to the demand for solutions to these problems, collaborates with other faculties, departments and organizations to promote education and research that targets a wide range of environmental fields, from individual living spaces to regional and global ecosystems. This department focuses on resolving apparent and potential regional environmental issues, ensuring healthy environments, creating sustainable global and regional ecosystems, and developing a new environmental science.



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Architecture and Architectural Engineering

Architecture and architectural engineering are multifaceted fields of study that look at humanity by taking on the responsibility for the ongoing evolution of the global environment and the creation of culture. The Department of Architecture and Architectural Engineering works on designing diverse architectural spaces with advanced functionality that are safe and secure, while encouraging the creation of culture. The overall goals are to promote education and advance research in the fundamental fields of planning, structures, and the environment, as well as education and research where students can redefine architecture within the context of natural and living environments in a comprehensive, practical way, while acquiring a wide range of specialized skills and creativity across disciplines, unrestricted by existing specialized fields.

Read more

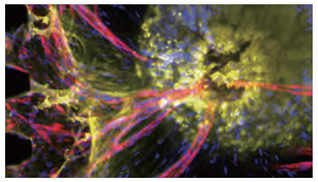
Mechanical Engineering and Science

Mechanical engineering focuses on a broad spectrum of physical systems—from the microscopic to the macroscopic—in order to develop technologies that benefit people in areas related to production systems, energy, the environment, lifestyles, life, living organisms, and medicine. The foundational disciplines are the mechanics of materials, heat, and fluids, as well as solid state physics, mechanical dynamics, vibration engineering, and control engineering. The foundation further requires the application of engineering concepts related to the design, manufacturing, evaluation, diagnosis, and control of mechanical systems and their elements. The Department of Mechanical Engineering and Science conducts research and educates students based on these concepts from a far-reaching perspective that aims for the symbiosis of people and nature. This department also aims to equip engineers and researchers with the ability to define and develop solutions to challenging problems as well as the leadership skills and adaptability to meet the requirements and expectations of society industry and academia.

Read more

Micro Engineering

The Department of Micro Engineering offers an education and research program for equipping researchers and engineers with the ability to research and develop the micro-mechanical systems that are anticipated to be a key driving force behind major changes in communities and lifestyles in the 21st century. Based on a fundamental knowledge of mechanical engineering, microengineering includes quantum engineering, required to clarify physical phenomena specific to the micro range (from the nanometer to micrometer order) and to use the quantum effects expressed at the nanometer level; material and micromachining engineering at the microscopic level to create and process materials; and system engineering and control engineering to build and manipulate nano- and microsystems. As well, this department uses the disciplines required for clarifying the functions of living organisms and for applying molecules and cells by studying living organisms, which are the assemblies of the most precise micromachines.



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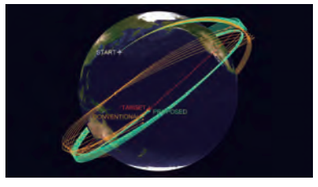
Aeronautics and Astronautics

Research in the Department of Aeronautics and Astronautics is broadly divided into these areas: interaction with the aerospace environment related to spacecraft or aircraft navigation; propulsion and energy; materials and structural strength; and systems and controls. In order to pioneer the frontier of aeronautics and astronautics, fundamental science and engineering are given the highest priority. In other words, our first mission is to expand the possibilities of advanced engineering beyond aeronautics and astronautics. Our second mission is to foster scientific and engineering professionals fully capable of creating original ideas based on in-depth knowledge.



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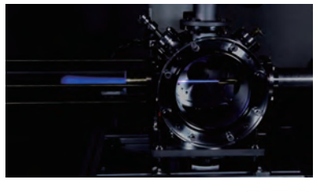
Nuclear Engineering

The Department of Nuclear Engineering pursues the ground-breaking science of quantum technologies, such as quantum beams, nanotechnology, and atom technology from a microscopic viewpoint founded on the science of elementary particles, atomic nuclei, atoms, and molecules. This department also aims to build a circular economy by implementing engineering applications for substances, energy, life, the environment, and other domains. In addition, the Department of Nuclear Engineering cultivates human resources, such as advanced researchers and highly specialized engineers, through education and research that is both systematic and multi-dimensional. This type of research and education contributes to the more prosperous and sustainable growth of society.



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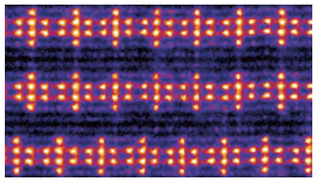
Materials Science and Engineering

Materials science and engineering is the field of study and technology to create novel materials required for producing new things that do not exist yet. For example, from iron which would rust and decompose if left untreated, the creation of special steels with various exceptional properties, including rust-resistant stainless steel, led to a drastic change of design for machinery and building structures throughout the world. As seen in history to date , the emergence of new materials causes a paradigm shift in the development of innovative technologies. The Department of Materials Science and Engineering promotes diverse fundamental research aimed at the development and practical application of structural and functional materials.



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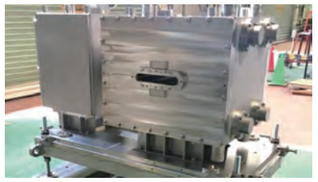
Electrical Engineering

Electrical engineering is a fundamental field of study for the use of electrical and electronic-related technologies in every corner of society. For example, electrical engineering has given us electric vehicles and wind power generation—both expected to contribute to the realization of a decarbonized society. Communications technology is also founded on electrical engineering: electromagnetic waves are producing achievements such as the fifth generation of mobile communications technology, also known as 5G. These are just a few examples of the fields covered by electrical engineering. The Department of Electrical Engineering educates and conducts research in a wide range of fields through four chairs (Advanced Electrical Systems Theory, Fundamentals of Systems, Biomedical Engineering, and Electromagnetics Engineering), as well as a cooperating chair and an endowed chair.



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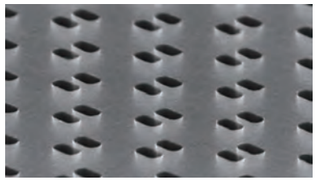
Electronic Science and Engineering

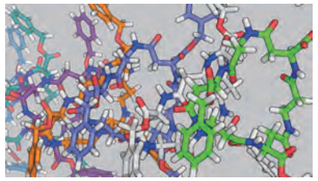
The Department of Electronic Science and Engineering contributes to society by establishing key technologies that will support optoelectronics for the next generation. The Department proposes new concepts based on the keywords of ***light*** and ***electron*** while promoting education and research that helps create innovative materials and devices based on these concepts. In our quest to find the best way to control light, we are doing world-leading research in many areas. For example, we made short-pulse, high-peak-power photonic crystal lasers that break the rules for conventional semiconductor lasers. We are also uncovering the properties of new wide-bandgap semiconductor materials to design and fabricate power electronics devices that use these materials. And we are elucidating the light emitting mechanism in semiconductors at the nano level as well as their application in highly efficient light emitting devices.



Read more

Material Chemistry

Chemistry is evolving into an academic discipline that includes techniques for creating new substances as well as investigations into the background and properties of a substance' s molecules and its unique functions. The research and education provided by the Department of Material Chemistry focuses on inorganic, organic, polymeric, and nanomaterials. The goals are to chemically design materials with novel functions and properties while investigating their structure, properties, and reactivity at the molecular and nano levels as well as establishing the methods for creating these materials. To promote the development of novel functional materials based on integrated science, the department participates in intra- and extradepartmental research exchanges and is developing the framework for more cooperative research.



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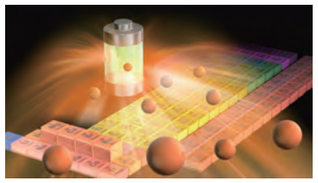
Energy and Hydrocarbon Chemistry

Chemistry is a discipline that clarifies previously unknown phenomena in natural science through experimentation and theory, then establishes new principles. This discipline is responsible for relaying the results in way that is useful to people and society. The Department of Energy and Hydrocarbon Chemistry promotes research into the highly efficient recycling of resources by effectively passing on an understanding of basic chemistry and constructing new scientific principles, then using this understanding as the foundation for creating highly original and academically significant innovative technologies that achieve the extremely efficient conversion of matter and energy. Through these studies, the Department consistently cultivates exceptional students who can independently find and investigate problems, then resolve these problems while maintaining high ethical standards.



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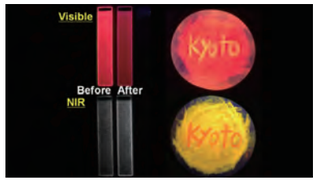
Molecular Engineering

Chemistry, a discipline that deals with converting substances, is steadily growing to include the design of molecules and materials with novel functions. The academic study of a substance helps to determine its properties in relation to electronic structure, molecular arrangement, and interactions. Molecular engineering is a new academic field founded on the fundamental study of microscopic phenomena such as atoms, molecules, and polymers. The ultimate goal is to theoretically and experimentally elucidate the interactions among atoms, molecules, and polymers and then directly apply these results to engineering at the molecular level. The Department of Molecular Engineering conducts fundamental research, from a theoretical molecular perspective, to help develop new electronic materials and other materials for energy and information applications. We cultivate researchers and engineers who can apply innovative ideas to develop these fundamentals into real-world applications.

Read more

Polymer Chemistry

Polymer chemistry is a field of study that merges material science as a fundamental discipline with applied science for practical requirements. This branch of chemistry includes a wide spectrum of fields from a variety of perspectives, including fundamental to applied science, synthetic to material properties, theory to experiment, organic to inorganic, micro to macro, and so on. The Department of Polymer Chemistry conducts basic research and education on the formation, reaction, structure, properties, and functions of polymers to support fields where advanced applications for polymers are steadily emerging, such as optoelectronics, electronics, information technology, high-performance materials, regenerative medicine, and nanotechnology. The department also contributes to the creation of new science and technology by relaying these achievements to society and by collaborating with related academic fields. The department equips researchers and engineers with the skills necessary to work constructively in advanced polymer-based fields.



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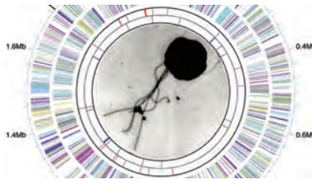
Synthetic Chemistry and Biological Chemistry

The philosophy of the Department of Synthetic Chemistry and Biological Chemistry is to create an interdisciplinary field of synthetic chemistry, or the study of creating a variety of substances and functions, as well as biological chemistry, which clarifies and uses biological functions. We use a close collaboration to establish a highly creative field of chemistry that is comprehensive and precise. The goal of the Chair of Synthetic Chemistry and Chair of Organic System Design is to illuminate the fundamentals and applications of material conversion aimed at efficient synthesis, the functions of inorganic and organic complex molecular assembly systems, and the correlation between the structure of molecules and molecular aggregates as well as their reactivity and physical properties. The goal of the Chair of Biological Chemistry is to understand and control biological phenomena at the molecular level within various hierarchies, such as molecules, systems, cells, and organisms (individuals), as well as to use biological functions and biomaterials to create substances with novel functionality.

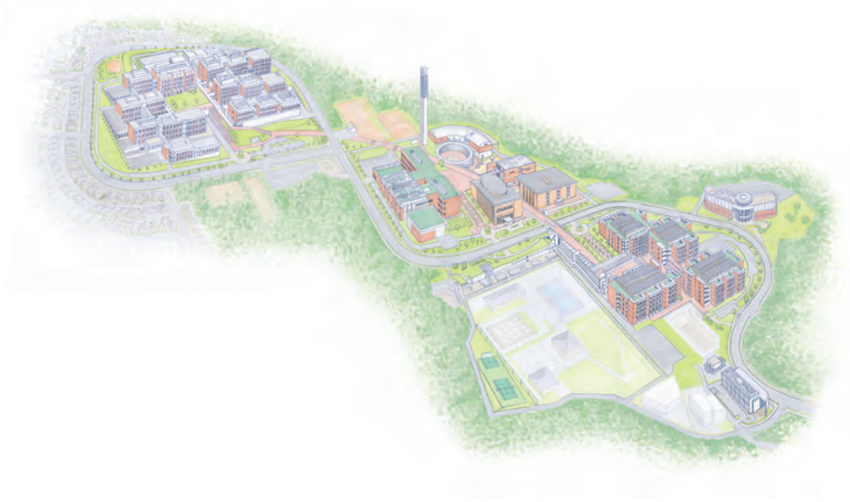


Read more

Chemical Engineering

Chemical engineering is a discipline where elemental phenomena are extracted from target processes and quantitatively evaluated to determine their essential nature and dynamic properties. Chemical engineers construct optimal systems, search for methods to improve the functionality of substances and materials, then efficiently produce materials and energy. They create substances and materials that are useful for humankind through chemical conversions, and also propose environmentally friendly and efficient methods for producing substances, materials, and energy. The Department of Chemical Engineering teaches and conducts research on these topics.

Read more



6 Research and Educational Facilities and Centers

Photonics and Electronics Science and Engineering Center

Read more

Towards the establishment of a center of excellence (COE) for development and social implementation of state-of-the-art photonic/electronic/quantum technologies and the formation of advanced education and research center for pioneering academic science

The purpose of this center is to establish a center of excellence (COE) for development and social implementation of state-of-the-art photonic/electronic/quantum technologies and to establish advanced education and research center for pioneering academic science.

The 21th century has been called the age of photonic, electronic, and quantum technologies. In order to realize the sustainable development in a world with ever-increasing demands for information processing and energy, it is essential to realize a super-smart society (Society 5.0) that highly integrates real space and virtual space, and to achieve carbon neutrality. For this purpose, realization of autonomous driving (smart mobility), smart manufacturing, quantum computation, and energy efficiency are of paramount importance, which require innovations for photonic, electronic, and quantum technologies. By bringing together academic members with education and research backgrounds on basic physics and industrial members with a strong desire for social development, this center aims to establish a COE for development and social implementation of state-of-the-art photonic/electronic/quantum devices that leverage the core technologies for which Kyoto University is globally renowned, such as “photonic crystals,” “photonic nanostructures,” and “wide-bandgap materials” .Furthermore, from 2022, the scope of activities has been expanded even further with a newly endowed course named "Advanced Smart Sensing (Sony Semiconductor Solutions) Course". In addition, this center also plays a role of education in the WISE program “Innovation of Advanced Photonic and Electronic Devices” , where the center aims to build an advanced education and research center for pioneering academic science in the fields of photonics, electronics, and quantum physics, in collaboration with the Graduate School of Informatics and the Graduate School of Science.

Research Center for Environmental Quality Management

Read more

Improving Environmental Quality by Controlling, Evaluating, and Mitigating Harmful Substances

The Research Center for Environmental Quality Management (RCEQM) focuses on environmental quality. The goals are to include engineering research with a more evolved education on the harmful effects of environmental pollutants on people and ecosystems under an integrated collaboration in three areas: control, evaluation, and mitigation. The RCEQM has a unique system for inviting professors from outside of Japan. The expectations for the achievements of the RCEQM are high, considering the increased global awareness of issues that directly affect people and ecosystems combined with the current recognition that even the slightest change to the environment has serious cumulative effects.

Quantum Science and Engineering Center

Read more

Nanoscale Science Research Using Particle Beam Accelerators.

The Quantum Science and Engineering Center (QSEC) contributes to the fields of material science, medicine, energy, and environment using highly functional quantum beams such as ion beams, electron beam, and X-rays from particle accelerators. QSEC uses these resources to observe phenomena at the atomic level and to promote the development of new materials and devices with advanced functionality. Further, the QSEC’ s particle accelerator is widely open to the public to supports advanced education and cutting-edge research. At the nuclear fuel facility, QSEC is working on fundamental research on nuclear fuel cycle technology.

Katsura Int'tech Center

Read more

Creating New World-Leading Technologies That Transcend the Boundaries of Specialized Fields.

The Center, with multiple research divisions from various departments and graduate schools, pursues pioneering strategic research and research exchanges with external organizations from a global perspective. The Center also has five laboratories (open labs)—used by a range of project groups—that are expected to develop substantially over the coming years.

Center for Information Technology

Read more

The construction and operation of IT systems for educational activities, research, and administrative affairs

The Center for Information Technology was established in 2002 with the aim of efficiently managing the information system of the Graduate School of Engineering, Kyoto University. The Center is responsible for the construction and management of IT systems for all educational, research, and administrative affairs, as well as for information security and literacy instruction. The Center also contributes to university-wide information systems by developing novel IT systems.

Occupational Health, Safety and Environmental Management Center

Read more

Ensuring a Comfortable Environment for the People Studying and Working at the Graduate School of Engineering

The aim of the Center is to incorporate the Graduate School of Engineering into an eco-friendly campus for education and research, while fully considering both safety and public health. The Center complies with the Industrial Safety and Health Act and other safety and health-related laws and regulations, while carrying out centralized operations for environmental protection. The Center also supports the education and research of the Graduate School of Engineering by providing faculty and technical staff who have expertise in work and working environment management, as well as health management, through work environment monitoring and systems for handling chemical substances.

Engineering Education Research Center

Read more

The mission of the Engineering Education Research Center is to establish a solid foundation for the future of engineering education by promoting the innovation of engineering education and by strengthening a globally minded education at Kyoto University Engineering. The end goal is to respond effectively to the diverse circumstances surrounding engineering education.

The Center is responsible for Faculty Development (FD) of junior faculty members and common courses for Kyoto University Engineering. To internationalize education at the university and develop global human resources, the Center uses EdTech (educational technology) to offer an advanced education for international students; promotes study abroad and fixed-term overseas study programs for students and young researchers; and proactively and strategically develops international partnerships through the onsite lab system and the double degree program.
The Center also provides common courses for Kyoto University Engineering to foster entrepreneurship with an eye on building stronger ties with society.

Research Administration Center

Read more

Supporting Researchers in Research-Related Tasks.

This center was established to support researchers conducting research as part of a projected called the Development Project to Foster and Secure Research Administrators from the Ministry of Education, Culture, Sports, Science and Technology (MEXT). We help researchers obtain competitive funding, manage projects, and promote industry-government-academia collaborations.

Interdisciplinary Research Institute for the Next Generation

Read more

Developing Human Resources Capable of Transcending Organizational Boundaries

The Interdisciplinary Research Institute for the Next Generation (iRING) was established in April 2023, through practical experience, to cultivate the researchers who will lead the next generation and by equipping them with new wide-ranging knowledge. Setting up interdisciplinary exchanges through research gives junior researchers the opportunity to think about the interconnections of knowledge and instills the ability to open up new fields by assimilating expertise and knowledge from other fields.

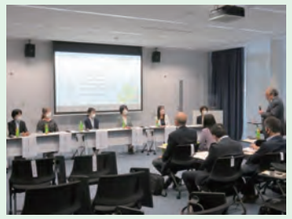
7 New Developments

At Kyoto University Engineering, innovative research takes place daily alongside the proactive implementation of unique activities that contribute to the advancement of education and research. Here are a few examples.

Realization of the Techno-Science Hill Katsura Concept Starting with the Katsura Library

On the Katsura Campus, the Graduate School of Engineering, Katsura Library, and Katsura Campus URA work together to realize the Techno Science Hill Katsura concept. Specifically, the Katsura Library, based on the idea of a new library with research support, plants the seeds of research at the Katsura Campus through four pillars: exhibitions, website/video content, testing and implementation, and events. These seeds are intended to build the foundation for sparking innovation and establishing an industry-academia collaborative network.

In academic year 2022/23, Kyoto University held the first Gender Network on Katsura campus (Katsura Jene), an industry-academia collaboration networking event for female researchers intended to showcase the accomplishments of female researchers and to build a network that connects specialized fields in industry and academia. This event was held to highlight diversity, where all researchers can play active roles, something that the university supports as part of university-wide inclusive research. This event, attended by 73 people both online and at the venue, featured a keynote address, research presentations, open discussions, and exhibits.



Open discussion highlights

Katsura Jene Event Flier

Katsura no Niwa
Catalogue for Advanced Research of Graduate School of Engineering by Katsura Library, Kyoto University

Holding the Kyoto University Women Researchers Industry-Academia Collaboration Networking Event: Katsura Jene

Improved and Enhanced Education in Kyoto University Engineering

The Faculty of Engineering holds the Faculty of Engineering Education Symposium as its own activity for faculty development (FD). In academic year 2022/23, under the theme of Considering Engineering Education Sustainable for the Future, participants exchanged information and discussed how to provide an education during the COVID-19 pandemic. As well, case studies were presented on connected education from high schools to university.

In addition, the Kyoto University Graduate School of Engineering organized and hosted one of the association's projects: the Doctoral Forum of the Eight-University Engineering Association. Students in the doctoral program organized and managed the forum under the theme Japan's Vision for the Future of Doctors: What should be done with doctoral recipients? The event featured a keynote address, panel discussions, and small group discussions between speakers and participants, with more than 130 people at the venue and online.

Group photo of the Doctoral Forum of the Eight-University Engineering Association

Doctoral Forum of the Eight-University Engineering Association was held on December 9, 2022

The 18th Faculty of Engineering Education Symposium was held on November 21, 2022

Promoting the Benefits and Features of Kyoto University Engineering

We created a new introductory brochure for junior and senior high school students entitled ***What is Kyoto University Engineering?*** and updated ***the Overview of Kyoto University Engineering*** to promote engineering at Kyoto University in a way that is easy to understand. On the Kyoto University Engineering website, we presented new content that includes special pages for prospective students, such as First Steps to Kyoto University Engineering (Faculty and Graduate School) centered on the real experiences of the faculty and current students.

In addition, as part of Kyoto University Open Campus 2022, we hosted a new online event, entitled Engineering for Female High School Students, to convey the appeal of engineering directly to female high school students, prospective female applicants, and their parents. The maximum capacity, 150 people, signed up for the event, which featured interactive projects and lectures by the faculty, alumni, and current students from each department.

Highlights of the Engineering for Female High School Students event

What is Kyoto University Engineering? (Cover page)

What is Kyoto University Engineering?

Joint projects by the Faculty of Engineering, Engineering for Female High School Students

Special page for prospective applicants (by the faculty)

Special page for prospective applicants (Graduate School)

Division of Civil, Environmental and Resources Engineering

Major Research Achievements in Academic Year 2022/23

Clarifying the Mechanism of and Controlling Wake Vibration in Stay Cables of Cable-Stayed Bridges

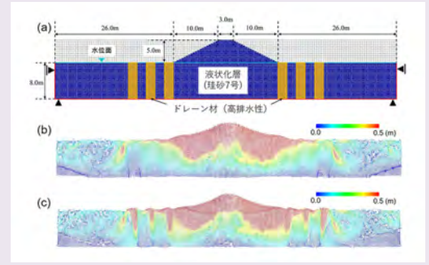
Some cable-stayed bridges use cables consisting of two cables stretched parallel and close to each other. Along such parallel cables, a vibration phenomenon called wake galloping may occur on the downstream side in strong winds, but controlling the vibration with anti-vibration devices such as dampers is known to be difficult. This study examined the hysteresis characteristic of aerodynamic force exerted on the vibrating cables and succeeded in clarifying the phenomenon. In addition, the study revealed that wake galloping can be suppressed by placing spiral protuberances on the cable surface, which change the airflow around the cables, resulting in elimination of the hysteresis characteristic. Based on these findings, aerodynamic control of vibration is expected to be possible in parallel cables.

Wind-tunnel test using a model of parallel cables with spiral protuberances

Read more

Predictive Simulations of Large Ground Deformation

The ground that supports our lives is a complex mixture of soil particles with water and air in the pore space. Once the ground is exposed to seismic forces, the contacts between the soil particles are severed, resulting in liquefaction and sometimes enormous deformations. Levees, indispensable for river flood control, can collapse when their foundation grounds are liquefied. We are developing technology to simulate this behavior using a large deformation analysis method called the particle method. In an analysis of a levee constructed with highly efficient drainage material to mitigate liquefaction, the simulation successfully reproduced the deformation of the levee and the runoff of water from the drains (see Figure X). This method can be used to understand the mechanism of a levee's collapse during earthquakes and to evaluate the effectiveness of countermeasures.

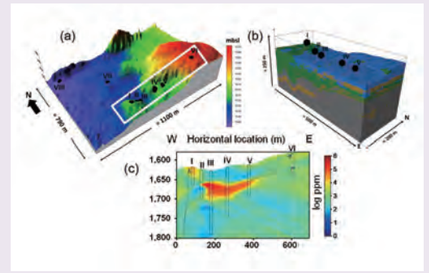


Simulation of the ground deformation of river levee subgrade due to liquefaction
(a) Analytical model, (b) soil displacement, (c) water displacement

Read more

Clarifying the Patterns and Generation of Metal Resources on the Seafloor

Exploring for metal resources (ore), for which global demand is rising rapidly, is growing not only on land but also underwater. However, it is difficult to survey the deep seafloor; the presence of resources cannot be accurately assessed from the small amount of information available. For this reason, we are working to comprehensively assess the existence and formation of metal ores by combining physical, chemical, and geological methods. This includes the simulation of hydrothermal flow that generates mineral deposits, the analysis of electrical properties beneath the seafloor, and the simulation of the spatial distribution of metal concentrations based on analyses of borehole samples. In the Okinawa Trough, we discovered a structure with a two-layered metal concentrated zone, which we took to be the result of rapid cooling of hydrothermal fluids on the seafloor that had been boiling deep underground. We also clarified the characteristics of rare earth concentration zones over a wide area, allowing us to estimate the amount of resources there.



(a) Seafloor topography of hydrothermal vent area, (b) estimated distribution of seafloor geology classified by color, (c) simulation of zinc concentration distribution (I-VI: boreholes, dotted lines: estimated flow of hydrothermal fluids)

Read more

Division of Architecture and Architectural Engineering

Major Research Achievements in Academic Year 2022/23

Students Take the Initiative for Updating the Yoshida Gallery

Making Design Exercise Reviews More Varied and Open

Design exercise is the general term for a requirement for first to forth -year students in the Undergraduate School of Architecture. Every student designs an architectural proposal based on a given brief. After submitting their designs, in a final review, undergraduates are given feedback by the person who prepared the brief. This final review is held in the Yoshida Gallery on the fourth floor of Research Building No. 9 on the Yoshida Campus. The drawings and models are displayed not only during the review, but also for a week after, so people outside the class can see the students' work.

Since the COVID-19 pandemic, the increased flexibility in class management afforded by the combined use of online classes has made it possible to invite tutors and critics from outside Kyoto. This was difficult to do in the past, but has now helped to update the curriculum for the design exercise. Today, a range of talented architects are invited to set varied themes, while final reviews are held in a more open way with simultaneous video streaming. At the same time, the Yoshida Gallery, which has limited flexibility in exhibition methods, was becoming poorly suited to accommodate changes in the way classes are held. It has been 20 years since the Yoshida Gallery was built.

Students Renovate Gallery through Workshops

In response, the Undergraduate School of Architecture renovated the Yoshida Gallery in academic year 2022/23 making the gallery able to accommodate small groups , as well as groups of about 100 people for exhibitions and reviews. Changes included design qualities suitable for displaying architectural design drawings and models as well as live streaming. To provide students with an opportunity to learn about the design and production of new exhibition space, a workshop was held for students and faculty of the Department of Architecture and Architectural Engineering with a company that makes fixtures for galleries.

The students, assisted by advisors with deep practical experience, studied the challenges and possibilities of the current gallery then decided to create a model display stand with a simple yet flexible mechanism for various types of display. The new display stand is strong and folds up compactly. The students visited the fixture manufacturer’ s factory to see and feel the materials and see the manufacturing machines, receiving advice on production issues at weekly meetings on Fridays. The students repeatedly created prototypes before reaching final production.

The renovated gallery will be used for design exercises and other activities beginning in academic year 2023/24. The exhibition environment is now more visually attractive, accessible, and better suited for conveying the appeal of the Undergraduate School of Architecture at Kyoto University, both inside and outside the school.

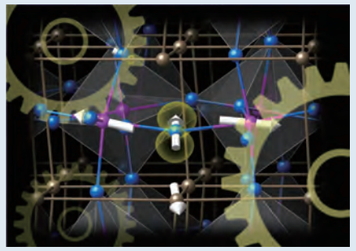
Commemorative photo: Workshop participants with the completed display fixtures and renovated display wall.

Division of Engineering Science

Major Research Achievements in Academic Year 2022/23

Mechanically Driven Functions in a Nanoscale World

Amid the current paradigm shift in nano and quantum technologies, one urgent need in the field of mechanical engineering is to create tiny machines that can function freely at the atomic and quantum level. The conventional wisdom is that it is impossible to have mechanical functions on such an extreme scale. We discovered that lattice defects. such as pervasive atomic vacancies and dislocations in substances, are responsible for mechanical functions that can interconvert mechanical, electrical, and magnetic energy, such as magnetic and ferroelectric properties. (Lattice defects were avoided in the past, being considered a factor that degraded the functions of conventional materials.) We are exploring the possibility of making the world's smallest quantum machines that interact with and respond to all external electric, magnetic, and force fields through lattice defects.

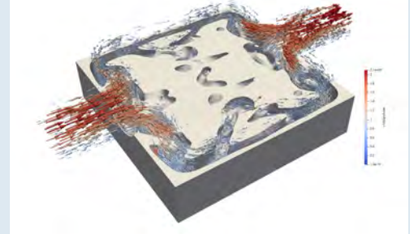


Lattice defects create electrical, magnetic, and mechanical functions in materials

Read more

Designing Fluid Devices Based on Optimized Topology

Flow optimization is a crucial aspect of mechanical systems that not only improves machine performance and dependability, but also results in a more efficient use of energy. At Kyoto University, we have been studying ways to apply topology optimization to flow channel design problems. Topology optimization promises radical improvements in structural performance. In this study, we developed a framework that integrates topology optimization with parallel computation methods and automatic mesh generation methods in order to automatically derive high-performance optimal shapes, even for large, intricate 3D models. This is being applied to the design of complex flow channels in cooling devices and heat exchangers that use forced and natural convection.

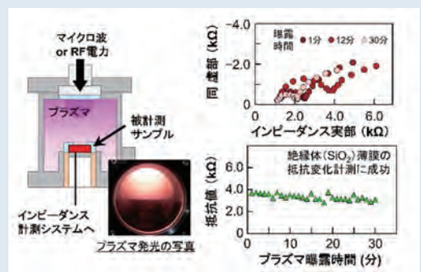


Example of optimized heat sink design

Capturing In Situ Monitoring of in the Properties of Materials Exposed to Extreme Environments

In aerospace engineering, or designing space probes and aircraft, solid (material) surfaces are sometimes exposed to extreme environments, such as high temperatures and ionized gas (plasma), that are radically different from normal environments.

Understanding the properties and deterioration of materials exposed to extreme environments is essential in the research and development of aerospace technologies. We took a novel approach of applying impedance spectroscopy, a measurement technique developed in electrochemistry, to the in situ diagnostics of plasma-exposed materials. We succeeded in capturing property changes of the materials placed in extreme environments. Using this new in situ monitoring technology, we are studying to achieve contributions in advanced aerospace engineering, such as developing materials resistant to extreme environments and accurate predictions for spacecraft lifetimes.



Schematic diagram (left) and typical measurement results of in situ impedance spectroscopy (We can derive the time variation of the sample resistance in the lower left from the impedance curve in the upper right.)

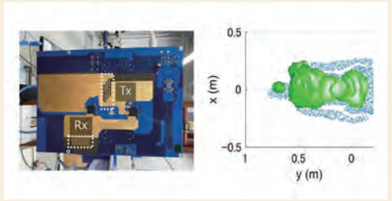
Read more

Division of Electrical and Electronic Engineering

Major Research Achievements in Academic Year 2022/23

Using Radio Wave Imaging to Develop Advanced Wireless Biometrics

When using wearable devices, discomfort is unavoidable, but biometric measurements might help to solve this problem. The wireless biometrics method, or using radio waves to measure breathing, heart rate, and other biometrics without making any physical contact, is gaining popularity as a way to measure biometrics. The Sakamoto Laboratory of the Department of Electrical Engineering has developed a radio wave imaging method using a millimeter-wave array radar (shown in Figure X) that, when combined with wireless biometrics, locates the target body part and selectively measures the biometric signals from that body part without making any contact. This method has been used to create 3-D images of the human body. The emergence of cutting-edge services is increasingly expected in the medical and healthcare industries as a result of these developments in wireless biometric technology.

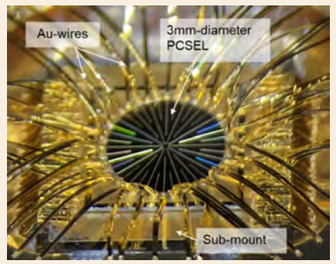


Left: A millimeter-wave array radar with multiple transmitting and receiving devices. Right: Radio imaging using a millimeter-wave array radar. From this image, it is possible to locate the target part of the body.

Read more

Photonic Crystal Laser Changes Game for Smart Manufacturing

Economic and social conditions are changing dramatically, such as the recent demand for digital transformation (DX) and increased investment in decarbonization and semiconductors. So, compact, highly efficient, and high-performing photonic-crystal surface-emitting lasers (PCSELs), suitable for digitization, are expected to be a game changer in a number of fields, including smart mobility and smart manufacturing. The Department of Electronic Science and Engineering (Noda Lab), in cooperation with the Photonics and Electronics Science and Engineering Center, has already been successful in demonstrating the applicability of PCSELs to smart mobility by boosting the brightness of pulsed-operated PCSELs and creating LiDAR fitted with a PCSEL. We very recently achieved a brightness (1 GW/cm^2/sr) comparable to that of large lasers operating continuously, and we have now arrived at a pivotal point in the development of smart manufacturing.



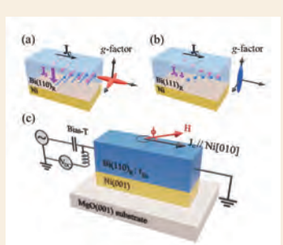
Microphotograph of a 3-mm diameter PCSEL capable of single mode operation beyond 50 W in a continuous wave. This brightness is comparable to large lasers (CO2 lasers and fiber lasers), which, with an expanded surface area (10 mm), are expected to rewrite the field of smart manufacturing, specifically for large lasers.

Noda Lab HP

PCSEL-COE

Creating High-Efficiency Spin Conversion in Bismuth (Bi)

The field of ***spintronics***, which uses the intrinsic spin of electrons as an information carrier, is being investigated for applications in high-density information recording, information devices with ultra-low energy consumption, and quantum computing. To generate spins, it is necessary to convert an electrical current to a spin current (spin conversion). Bismuth (Bi) was expected to be the most efficient single element for spin conversion, but despite years of attempts by researchers, the efficiency was nearly zero, leaving a significant problem unsolved. We focused on the relationship between the crystal structure of Bi and the g-factor, a parameter that determines the spin magnetic moment and finally achieved one of the highest spin conversion efficiencies for a single element.



Relationships between the g-factor and the different crystal structures of Bi are shown in (a) and (b). In Bi(110), the in-plane g-factor is large, enabling the generation of efficient spin currents.
(c) Conceptual diagram of the fabricated spin memory equipment.

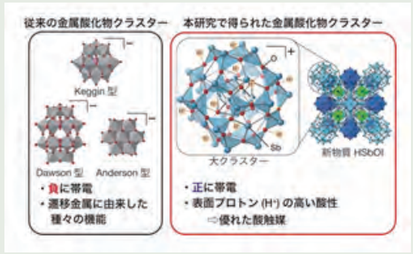
Read more

Division of Chemical Science and Technology

Major Research Achievements in Academic Year 2022/23

Discovery of Positively Charged Oxide Clusters; High Potential as Acid Catalysts

Profs. Kageyama and Abe, along with their colleagues, previously reported that some mixed anion compounds containing multiple anion species in a single phase are excellent photocatalysts for visible-light-induced water splitting (i.e., clean hydrogen production). In the course of improving their photocatalytic activities by introducing iodide anions in place of chloride anions with an expectation of narrower bandgaps, they accidentally discovered HSbOI, a new compound (right side of figure), composed of hydrogen, antimony, oxygen, and iodine. Since this positively charged oxide cluster showed high activity and selectivity as an acid catalyst, it is expected to provide a new design principle for developing efficient catalysts that are distinct from conventional ones, and thereby to help achieve the UN's Sustainable Development Goals (SDGs).

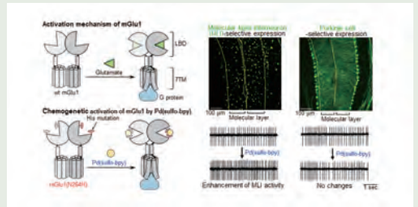


HSbOI: conventional metal oxide clusters and positively charged metal oxide cluster crystals determined in this study

Read more

Successful Activation of Neurotransmitter Receptors in Targeted Brain Tissue Cells Raises Expectations for Unraveling Memory and Learning Mechanisms

The 100 billion neurons in our brains are interconnected by synapses that form a complex network of neural circuits and perform higher brain functions such as memorization, learning, and emotional behavior. The neurotransmitter glutamate and its receptors (glutamate receptors) are primarily responsible for signaling in excitatory synapses. We focused on metabolic glutamate receptor type 1 (mGlu1), crucial for the neural circuits of the cerebellum, which supports motor function and motor learning. In this study, we successfully developed a new chemogenetic method- - for freely manipulating the function of this receptor. This method could be applied to other glutamate receptors and is expected to accelerate and improve our understanding of the neural circuits involving individual glutamate receptors.

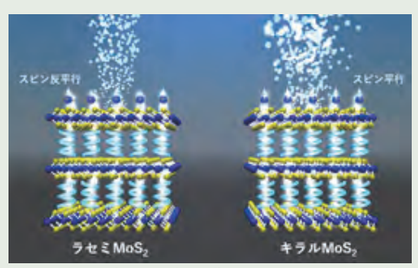


Schematic diagram (left) and typical results (right) of a new method (coordination chemogenetics) for activating metabolic glutamate receptor type 1 (mGlu1)

Read more

Control of the Spin in the Electrical Current Boosts Efficiency of Water Electrolysis

Hydrogen production technology based on the electrolysis of water (i.e., water electrolysis) is gaining widespread attention for helping to realize a sustainable society. To produce hydrogen efficiently via water electrolysis, an efficient oxygen-evolving reaction at the anode is required in addition to the hydrogen-evolving reaction at the cathode. In this study, chiral molecules were inserted between the layers of a layered molybdenum disulfide (MoS_2) to create a novel compound called chiral MoS_2, which has the property of aligning the spin in electric currents in the same orientation. By simply coating this compound onto the conductive electrode, the spins are aligned in the same orientation for approximately 75% of the current, suppressing the formation of hydrogen peroxide and thus increasing the efficiency of the oxygen evolution reaction, which has been a bottleneck for water electrolysis efficiency.



Schematic diagram of oxygen evolution efficiency improvement by chiral MoS_2. Spin orientations in current are random (on left) and aligned in parallel (on right).

Read more

8 International Exchanges

Kyoto University Engineering promotes international exchanges for education and research that contribute to the global community through academic studies and research. The goals of these exchanges are working to advance science and technology in harmony with nature with a focus on basic research; developing human resources equipped with high levels of expertise and ethical standards; providing an excellent education; and nurturing originality.

Europe (including new independent states) (8)	Partner institution (17)
United Kingdom	University of Birmingham, School of Engineering, etc.
Netherlands	Delft University of Technology
Sweden	Chalmers University of Technology
	Linköping University
Czech Republic	Czech Technical University in Prague
Germany	Heinrich Heine University Düsseldorf, Institute of Organic Chemistry and Macromolecular Chemistry
	Technical University of Dortmund, Faculty of Biochemical and Chemical Engineering
	University of Freiburg, Faculty of Engineering
	University of Freiburg, Department of Microsystems Engineering (Tri-party agreement to which the University of Michigan in the United States is also a party)
Norway	Norwegian University of Science and Technology
France	ENSAPLV (École nationale supérieure d'architecture de Paris-La Villette)
	Pierre and Marie Curie University (Paris VI)
	University of Rennes 1, Sciences and Properties of Matter (SPM) and Rennes School of Engineering (ESIR)
	University of Rennes 1, Lannion IUT
	IPGP (Institut de physique du globe de Paris)
	EPHE (École pratique des hautes études)
Poland	AGH University of Science and Technology

Middle East (1)	Partner institution (1)
United Arab Emirates	United Arab Emirates University, Colleges of Science and Engineering

Africa (2)	Partner institution (2)
Egypt	American University in Cairo, School of Sciences and Engineering
Kenya	Jomo Kenyatta University of Agriculture and Technology

Asia (8)	Partner institution (15)
India	National Institute for Interdisciplinary Science and Technology (NIIST)
Indonesia	Brawijaya University, Faculty of Engineering
Thailand	King Mongkut's University of Technology Thonburi (KMUTT) (Joint Graduate School of Energy and Environment: JGSEE)
	King Mongkut's Institute of Technology Ladkrabang (KMITL)
Korea	Kyung Hee University, College of Engineering
	Korea Institute of Construction Technology
Taiwan	National Cheng Kung University, College of Engineering
China	Dalian University of Technology
	Graduate School of Tongji University
	Graduate School of Southeast University
	Tianjin University, School of Science
	Chinese University of Hong Kong, Shenzhen (CUHK-Shenzhen), School of Science and Engineering
	Jilin University
Viet Nam	Hanoi University of Civil Engineering
Malaysia	University of Technology Malaysia, Faculty of Built Environment and Surveying, etc.

Joint Workshop with ENSAPLV (École nationale supérieure d'architecture de Paris-La Villette)

Highlights of the Walking Survey in Paris

Students majoring in architecture and architectural engineering join ENSAPLV students in Paris for field research, discussions, and presentations, each time under a specific theme.

International Internship Program

TUD students at a post-internship debriefing

Dortmund city center

In partnership with the Technical University of Dortmund (TUD) in Germany, since 1990 we have offered an international internship program for students majoring in chemical engineering. Japanese and German students participate in internships at companies in each other's country for two months, with program coordinators at TUD making arrangements for Kyoto University students and those at Kyoto University for TUD students. After orientations, the interns work at companies, then submit final reports, and have their credits recognized by their host universities.

North America (2)	Partner institution (7)
United States	University of Wisconsin-Madison, College of Engineering
	University of Washington, College of Engineering
	University of Texas at Austin, Cockrell School of Engineering
	Rensselaer Polytechnic Institute, School of Engineering
	University of Michigan, College of Engineering (Tri-party agreement to which the University of Freiburg in Germany is also a party)
	City University of New York, Energy Institute
Canada	University of Western Ontario, Faculties of Engineering and Science

Kyoto University-Tsinghua University Cooperative Research and Education Center for Environmental Technology, an on-site laboratory of Kyoto University

Japan-China Symposium on Cooperative Research and Education in Environmental Technology

Signing ceremony for the founding of CRECET

In December 2018, Kyoto University-Tsinghua University Cooperative Research and Education Center for Environmental Technology (CRECET) was designated as an onsite laboratory of Kyoto University with the aim of solving environmental problems through joint education and research in the area of environmental engineering. In collaboration with Tsinghua Shenzhen International Graduate School, CRECET promotes the research and development of environmental technologies needed to achieve a sustainable society, while at the same time acting as a liaison office to enable joint research with external partners, such as private-sector businesses. CRECET also is an internship site for Kyoto University students and a contact point for Tsinghua University students searching for internship opportunities in Japan.

Central and South America (1)	Partner institution (1)
Brazil	University of São Paulo, School of Engineering

Kyoto University-University of Malaya Overseas Base in Malaysia for Education and Research (Malaysia)

Global Center of Excellence Kyoto University-Institut Teknologi Bandung for GCOE Joint Research and Education Center (Indonesia)

Egypt-Japan University of Science and Technology (E-JUST)

In collaboration with the Japan International Cooperation Agency (JICA), we support Egypt-Japan University of Science and Technology (E-JUST), a joint project by the Japanese and Egyptian governments. We provide support and collaborate to help with education and research, as well as with the operation and administration of the university, particularly in areas related to the Materials Science and Engineering Program. We also promote interdisciplinary research with other programs including the Mechatronics and Robotics Engineering Program.

Visit to E-JUST

Summer seminar on advanced microchemistry

Kyoto University WISE Program: Innovation of Advanced Photonic and Electronic Devices

International Seminar Dojo

We offer a five-year doctoral program designed to produce international leaders in fields related to advanced photonic and electronic devices. Students are leaders with a strong sense of responsibility and a high level of ethical standards, working under the common philosophy of "challenging physical limits and developing an information-oriented and energy-saving society."

Oceania (2)	Partner institution (2)
New Zealand	Victoria University of Wellington, Faculties of Science, Engineering, and Architecture and Design Innovation, Robinson Research Institute, and Ferrier Research Institute
Australia	Royal Melbourne Institute of Technology

Partner institution

Overseas research base

Kyoto University–Tsinghua University Cooperative Research and Education Center for Environmental Technology (CRECET), an onsite laboratory of Kyoto University

As of May 1, 2023

Scan this QR code for more information on international exchange agreements and international partner institutions.

Number of international students

Undergraduate	Graduate	Doctoral
138	125	267

Total 530

As of May 1, 2023

Number of international research students

Research students	Special auditing students	Special research students	Short-term exchange students
17	13	4	3

Total 37

As of May 1, 2023

Number of international scholars

Guest scholars	Guest research associates	Visiting research scholars
31	69	3

Total 103

Academic year 2022/23

Scan this QR code for figures by country and region.

Scan this QR code for exchange agreements between Kyoto University and international partner institutions.

9 Kyoto University Engineering Fund

This section provides an overview of the Kyoto University Engineering Fund set up by Kyoto University Engineering. Using this fund, we intend to improve the research infrastructure and amenities at the beautifully scenic Katsura Campus—dubbed "Techno-Science Hill Katsura"—as well as nurture a high level of expertise and a wealth of creativity for the engineers who will help shape the future.

About the Kyoto University Engineering Fund

We believe that the mission of Kyoto University Engineering is to contribute to the creation and development of environmentally conscious scientific knowledge as well as technologies to build a brighter future. We adhere to our educational philosophy: understanding underlying scientific principles and theories is essential for largescale applications and developments into the future.

Guided by this mission, Kyoto University Engineering strives to develop young, high-caliber engineering talent with advanced expertise firmly based on fundamental knowledge, rich creativity, and a sense of dignity.

As of 2023, it has been 20 years since the Graduate School of Engineering moved to the Katsura Campus. Situated in rich natural surroundings, the Katsura Campus is spacious and beautiful. However, it is not well equipped with amenities, such as dormitories, and the distance between the Yoshida and Katsura Campuses, where the Graduate School of Informatics and the Graduate School of Engineering are located, has made it difficult to pursue education and research.

The Kyoto University Engineering Fund was set up to overcome this situation by all available means.

Using this fund, we will improve the existing information exchange network and science education facilities at the Katsura Library, as well as other amenities, in this way creating and maintaining an environment that supports the development of future leaders of engineering by enabling students and young researchers to concentrate on their research and extracurricular activities.

We would like to ask for your kind donations and support for Kyoto University Engineering.

Examples of use of the Kyoto University Engineering Fund

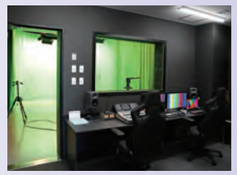
● Support for students to participate in a short-term training program in the United States

Kyoto University Engineering has launched a short-term overseas training program for students to help them take the first step toward becoming internationally minded. In academic year 2022/23, the Kyoto University Engineering Fund provided, by covering their travel expenses, support to 11 students for a short-term training program in the United States.

● Facilities for the Katsura Library of Kyoto University

The Katsura Library, which opened in April 2020, has been updated with new facilities including rare book storage racks and a studio inside the media creation room.

As a result, we can now preserve valuable data and materials for the Graduate School of Engineering. As well, faculty and students are provided with new ways of presenting and disseminating their research findings, such as creating video content.



Uses of the Kyoto University Engineering Fund

Educational support	• Virtual reality (VR) for use in safety training and pre-experiment briefings • Development of teaching tools capable of multilingual translation • Study rooms that are available 24 hours a day • Enhanced learning environments for undergraduates, such as active learning rooms
Construction and renovation of amenities	• Improved amenities, including building a dormitory for international and Japanese students, as well as a fitness center • Subsidies for operating the School Nurse Office for students' mental and physical healthcare
Construction and renovation of research infrastructure	• Functional improvements of the Katsura Library • More advanced information networks • Promotion of open data
Training and development of young researchers	• Subsidies for the Seiran Program, a training program for young faculty members • Financial support for young researchers, subsidizing the cost of long-term stays overseas • Financial support for the launch of new research projects
International exchanges	• Accommodations for international researchers • Establishment and operational support of onsite laboratories as well as the promotion of international exchanges
Industry-university collaboration	• Collaboration with local communities • Support for startup ventures

How to Donate

You can donate online or via a bank transfer.

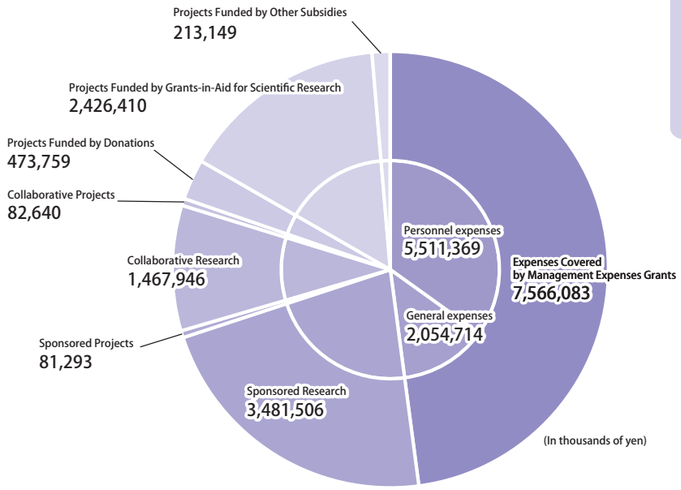
For further details,
please see the Kyoto University Engineering website.

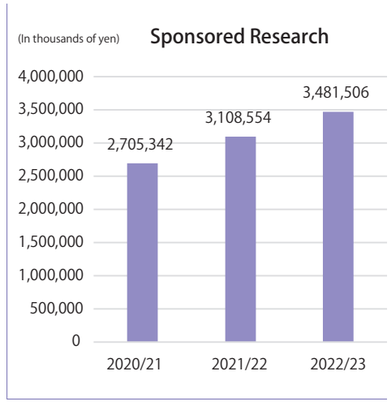
10 Financial Status

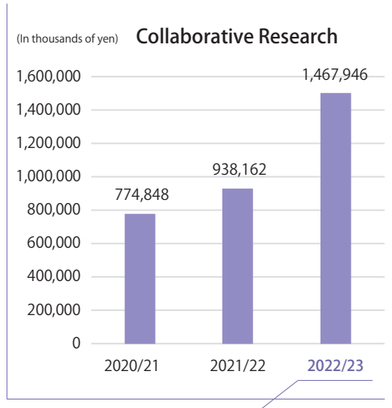
As a unit within Kyoto University, the Graduate School of Engineering has one of the biggest budgets. Operating expenses in academic year 2022/23 are outlined below.

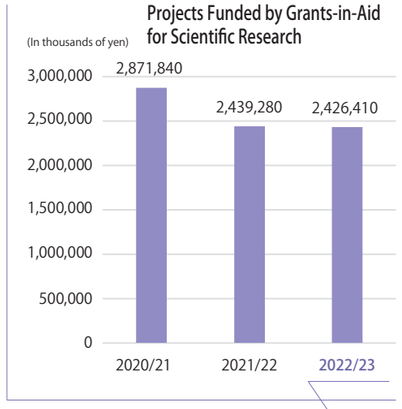
Operating expenses in academic year 2022/23

Category	Amount (in thousands of yen)
Expenses Covered by Management Expenses Grants	7,566,083
Personnel expenses	5,511,369
General expenses	2,054,714
Sponsored Research	3,481,506
Sponsored Projects	81,293
Collaborative Research	1,467,946
Collaborative Projects	82,640
Projects Funded by Donations	473,759
Projects Funded by Grants-in-Aid for Scientific Research	2,426,410
Projects Funded by Other Subsidies	213,149
Other Large-scale Projects	0
Total	15,792,786

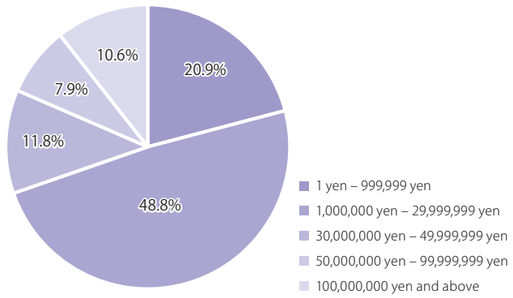








Collaborative Research in 2022/23 by Size of Expenses



Projects Funded by Grants-in-Aid for Scientific Research in 2022/23 by Type of Grant

Type of Grant	Number of projects	Amount (in thousands of yen)
Grant-in-Aid for Scientific Research (S)	5	168,220
Grant-in-Aid for Scientific Research (A), (B), and (C)	191	992,030
Grant-in-Aid for Early-Career Scientists (A) and (B)	66	116,480
Grant-in-Aid for Specially Promoted Research	3	447,460
Grant-in-Aid for Scientific Research on Innovative Areas / Grant-in-Aid for Transformative Research Areas (A) and (B)	34	432,510
Grant-in-Aid for JSPS Fellows	93	81,300
Others	61	188,410
Total	453	2,426,410

Statistics Data

Number of academic and administrative staff

Academic Staff

(Black: Katsura Campus, Blue: Yoshida Campus, etc.) As of May 1, 2023

Departments & Centers	Professor	Associate professor	Senior Lecturer	Assistant professor	Total
Department of Civil and Earth Resources Engineering	11 (3)	8 (2)	1	17	37 (5)
Department of Urban Management	8 (3)	14		7 (1)	29 (4)
Department of Environmental Engineering	4 (1)	5 (1)		6 (1)	15 (3)
Department of Architecture and Architectural Engineering	14	9		10	33
Department of Mechanical Engineering and Science	11	7	3	8	29
Department of Micro Engineering	6	5	3	5	19
Department of Aeronautics and Astronautics	6	1 (1)	1	3	11 (1)
Department of Nuclear Engineering	5	3	2	4	14
Department of Materials Science and Engineering	9	10	2	18	39
Department of Electrical Engineering	6	2 (1)	4	5	17 (1)
Department of Electronic Science and Engineering	6	9	1	6	22
Department of Material Chemistry	8	5	1	11	25
Department of Energy and Hydrocarbon Chemistry	9	8	1	12	30
Department of Molecular Engineering	5 (1)	4	2	8	19 (1)
Department of Polymer Chemistry	5 (1)	5	1	8 (2)	19 (3)
Department of Synthetic Chemistry and Biological Chemistry	7	7	4	9	27
Department of Chemical Engineering	7	7	1	10	25
Photonics and Electronics Science and Engineering Center		1	1	2	4
Research Center for Environmental Quality Management	1			1	2
Quantum Science and Engineering Center	1	2			3
Katsura Int'tech Center					
Center for Information Technology			[2]		[2]
Occupational Health, Safety and Environmental Management Center		[1]			[1]
Engineering Education Research Center	1		5		6
Total	130 (9)	112 (5) [1]	33 [2]	150 (4)	425 (18) [3]
Katsura Campus Total	119 (9)	100 (5) [1]	31 [2]	131 (4)	381 (18) [3]
Yoshida Campus, etc. Total	11	12	2	19	44

Note 1: ( ) The numbers in parentheses indicate the number of academic staff belonging to Graduate School of Global Environmental Studies, Graduate School of Management and Institute for Liberal Arts and Sciences, in addition to the regular figures.
Note 2: [ ] The numbers in parentheses indicate the personnel who are officially classified to other sections, in addition to the regular figures. Note 3: Including Specially Contracted Fixed-Term Faculty

Administrative Staff

(Black: Katsura Campus, Blue: Yoshida Campus, etc.) As of May 1, 2023

Departments and Undergraduate Schools	Administrative Staff	Technical Staff	Program-Specific Researcher	Total
Department of Civil and Earth Resources Engineering	1	3	4	8
Department of Urban Management	1	1		2
Department of Environmental Engineering		2	3	5
Department of Architecture and Architectural Engineering		2	1	3
Department of Mechanical Engineering and Science	1	5	1	7
Department of Micro Engineering	1	1	3	5
Department of Aeronautics and Astronautics				
Department of Nuclear Engineering		2		2
Undergraduate School of Civil, Environmental and Resources Engineering				
Undergraduate School of Architecture				
Department of Materials Science and Engineering	2	4	4	10
Undergraduate School of Engineering Science				
Department of Electrical Engineering			4	4
Department of Electronic Science and Engineering			9	9
Department of Material Chemistry	2		4	6
Department of Energy and Hydrocarbon Chemistry	2	2	6	10
Department of Molecular Engineering	3	1	2	6
Department of Polymer Chemistry		1	1	2
Department of Synthetic Chemistry and Biological Chemistry	1	3	2	6
Department of Chemical Engineering	2	1	5	8
Undergraduate School of Electrical and Electronic Engineering				
Undergraduate School of Chemical Science and Technology				
Undergraduate School of Informatics and Mathematical Science		1		1
Research Center for Environmental Quality Management			2	2
Katsura Int'tech Center		2		2
Center for Information Technology		3		3
Occupational Health, Safety and Environmental Management Center		4		4
Administration Office (Graduate School of Engineering), Katsura Campus: located in Katsura	99	4		103
Administration Office (Graduate School of Engineering), Katsura Campus: located in Yoshida	21			21
Total	136	42	51	229
Total for Katsura Campus	113	37	45	195
Total for Yoshida Campus, etc.	23	5	6	34

Note: Including Specialist Administrative Staff, Re-employed Staff and Support Staff

Number of students

Graduate Students

(Black: Katsura Campus, Blue: Yoshida Campus, etc.) As of May 1, 2023

Departments	Master's Program		Doctoral Program						Total	
			Year 1		Year 2		Year 3			
	Year 1	Year 2	April	October	April	October	April	October	April	October
Department of Civil and Earth Resources Engineering	75	75	11	6	12	3	19	5	192	[14]
Department of Urban Management	56 [1]	56	18	8	12	6	16	6	158	[21]
Department of Environmental Engineering	40	42 [1]	5	6	4	5	12	4	103	[16]
Department of Architecture and Architectural Engineering	76	91	8	8	15	4	24	7	214	[19]
Department of Mechanical Engineering and Science	58	60	8	3	7	1	19	4	152	[8]
Department of Micro Engineering	37	33	4		4	3	11	1	89	[4]
Department of Aeronautics and Astronautics	24	21	4		5		1		55	
Department of Nuclear Engineering	22	24	7	2	8		5		66	[2]
Department of Materials Science and Engineering	42	43	13	3	9	2	6	2	113	[7]
Department of Electrical Engineering	40	45	3		3	1	10	2	101	[3]
Department of Electronic Science and Engineering	32	34	9	1	7		5		87	[1]
Department of Material Chemistry	29	31	6		3		4	1	73	[1]
Department of Energy and Hydrocarbon Chemistry	39	45	15		6	1	16	1	121	[2]
Department of Molecular Engineering	31	38	7	1	8	1	10	3	94	[5]
Department of Polymer Chemistry	43	55	13	1	5		8	2	124	[3]
Department of Synthetic Chemistry and Biological Chemistry	27	44	9	2	5	2	15	2	100	[6]
Department of Chemical Engineering	33	37	3	1	5		4	2	82	[3]
Total	704 [1]	774 [1]	143	42	118	29	185	42	1,924	[115]
Total for Katsura Campus	662 [1]	731 [1]	130	39	109	27	179	40	1,811	[108]
Total for Yoshida Campus, etc.	42	43	13	3	9	2	6	2	113	[7]

Note: The numbers in parentheses indicate the number of Master's Course students enrolled in October, in addition to the regular figures.

Undergraduate Students

As of May 1, 2023

Undergraduate Schools	Year 1	Year 2	Year 3	Year 4	Total
Undergraduate School of Civil, Environmental and Resources Engineering	184	186	187	228	785
Undergraduate School of Architecture	83	82	81	101	347
Undergraduate School of Engineering Science	239	241	242	290	1,012
Undergraduate School of Electrical and Electronic Engineering	132	133	140	172	577
Undergraduate School of Informatics and Mathematical Science	91	94	94	136	415
Undergraduate School of Chemical Science and Technology	244	243	237	318	1,042
Total	973	979	981	1,245	4,178

Admission for Academic Year 2023/24

Graduate School

Departments	Master's Program		
	Quota	Applicant	Freshperson
Department of Civil and Earth Resources Engineering	58	161 [27]	75 [12]
Department of Urban Management	57		56 [4]
Department of Environmental Engineering	36	44 [9]	40 [9]
Department of Architecture and Architectural Engineering	75	97 [9]	76 [4]
Department of Mechanical Engineering and Science	59		58 [5]
Department of Micro Engineering	30	160 [8]	37 [2]
Department of Aeronautics and Astronautics	24		24
Department of Nuclear Engineering	23	28 [2]	22 [1]
Department of Materials Science and Engineering	38	49 [2]	42 [2]
Department of Electrical Engineering	38	107 [6]	40 [1]
Department of Electronic Science and Engineering	35		32
Department of Material Chemistry	29		29 [3]
Department of Energy and Hydrocarbon Chemistry	39		39 [2]
Department of Molecular Engineering	35	188 [27]	31 [4]
Department of Polymer Chemistry	46		43 [3]
Department of Synthetic Chemistry and Biological Chemistry	32		27 [3]
Department of Chemical Engineering	34	40	33
Total	688	874 [90]	704 [55]

Note: The numbers in parentheses indicate the number of foreign students, in addition to the regular figures.

Departments	Doctoral Program		
	Quota	Applicant	Freshperson
Department of Civil and Earth Resources Engineering	17	18 (4) [10]	18 (4) [10]
Department of Urban Management	17	＊27 (3) [19]	＊26 (3) [18]
Department of Environmental Engineering	10	13 [12]	11 [10]
Department of Architecture and Architectural Engineering	22	16 (7) [5]	16 (7) [5]
Department of Mechanical Engineering and Science	16	10 (2) [4]	11 (2) [5]
Department of Micro Engineering	7	4 (1)	4 (1)
Department of Aeronautics and Astronautics	7	4 (1)	4 (1)
Department of Nuclear Engineering	9	8 (1) [2]	9 (1) [3]
Department of Materials Science and Engineering	10	17 [12]	16 [11]
Department of Electrical Engineering	10	3	3
Department of Electronic Science and Engineering	10	10 [2]	10 [2]
Department of Material Chemistry	9	8 [4]	6 [3]
Department of Energy and Hydrocarbon Chemistry	11	15 (1) [7]	15 (1) [7]
Department of Molecular Engineering	10	10 (1) [2]	8 (1) [2]
Department of Polymer Chemistry	15	14 [5]	14 [5]
Department of Synthetic Chemistry and Biological Chemistry	10	11 (1) [6]	11 (1) [6]
Department of Chemical Engineering	7	4 [2]	4 [2]
Total	197	192 (22) [92]	186 (22) [89]

Note 1: The numbers in parentheses ( ) and [ ] indicate the number of specially selected career-track working students and foreign students, respectively, and both are included in the regular figures.
Note 2: The numbers of applicants and freshpersons are respectively the sum of those applied in October, 2022, and those applied in April, 2023.
＊A foreign and selected career-track working student.

Undergraduate School

Undergraduate Schools	Quota	Applicant	Freshperson		
			Male	Female	Total
Undergraduate School of Civil, Environmental and Resources Engineering	185	469 [29]	165 [4]	19 [4]	184 [8]
Undergraduate School of Architecture	80	297 [4]	67	16 [2]	83 [2]
Undergraduate School of Engineering Science	235	787 [6]	223 [3]	16	239 [3]
Undergraduate School of Electrical and Electronic Engineering	130	387 [11]	120 [4]	12 [1]	132 [5]
Undergraduate School of Informatics and Mathematical Science	90	432 [11]	83	8 [1]	91 [1]
Undergraduate School of Chemical Science and Technology	235	323 [14]	206 [3]	38 [5]	244 [8]
Total	955	2,695 [75]	864 [14]	109 [13]	973 [27]

Note 1: The numbers in parentheses [ ] indicate the number of foreign students, and are included in the regular figures.
Note 2: The numbers of applicants are counted for their first choice.

Graduation/Completion and the number

Graduate School

Departments	Master's Program		Doctoral Program
	Academic Year 2022/23	Total sum	As of May 1, 2023 Total number of those who withdrew from research guidance approval
Department of Industrial Chemistry		1,263	212
Department of Hydrocarbon Chemistry		758	137
Department of Synthetic Chemistry		582	163
Department of Mechanical Engineering		1,154	78
Department of Physical Engineering		462	38
Department of Mechanical Engineering and Science		212	6
Department of Precision Engineering		860	56
Department of Metallurgy		634	47
Department of Metal Science and Technology		567	43
Department of Energy Science and Engineering		57	2
Department of Aeronautical Engineering		388	32
Department of Electronic Science and Engineering		227	15
Department of Electrical Engineering II		730	67
Department of Electrical Engineering		110	2
Department of Applied Mathematics and Physics		785	84
Department of Information Engineering		508	44
Department of Applied System Science		342	10
Department of Civil Engineering		1,996	143
Department of Transportation Engineering		598	14
Department of Civil Engineering Systems		240	23
Department of Earth Resources Engineering		681	40
Department of Sanitary Engineering		620	54
Department of Environmental Engineering		205	8
Department of Global Environment Engineering		501	30
Department of Architectural Engineering		514	51
Department of Architecture and Environmental Design		159	17
Department of Material Chemistry	34	805	39
Department of Energy and Hydrocarbon Chemistry	41	1,038	73
Department of Molecular Engineering	27	1,095	69
Department of Polymer Chemistry	49	2,228	294
Department of Synthetic Chemistry and Biological Chemistry	31	864	83
Department of Chemical Engineering	35	1,678	131
Department of Nuclear Engineering	28	1,265	167
Department of Materials Science and Engineering	44	1,059	22
Department of Electrical Engineering	36	1,676	114
Department of Electronic Science and Engineering	30	1,442	101
Department of Architecture and Architectural Engineering	71	2,471	202
Department of Civil and Earth Resources Engineering	68	1,202	62
Department of Urban Management	64	1,073	52
Department of Environmental Engineering	37	1,023	53
Department of Mechanical Engineering and Science	58	979	50
Department of Micro Engineering	26	445	31
Department of Aeronautics and Astronautics	21	551	33
Total	700	36,047	2,992

Number of Doctoral Graduates

Type		Doctor of Engineering
Old University System	According to the degree law after June, 1920	42 [28]
	According to the degree law after July, 1920	1,338
New Education System	By completing the doctorate courses	5,153
	By submitting doctorate thesis	4,209
Total		10,742 [28]

As of May 1, 2023

Note: The numbers in parentheses [ ] indicate the number of doctors based on recommendation, and are included in the regular figures.

Undergraduate School

Undergraduate Schools	Academic Year 2022/23	Total sum
Department of Civil Engineering		3,222
Department of Mechanical Engineering		2,122
Department of Electrical Engineering		2,112
Department of Mining		357
Department of Mineral Science and Technology		1,073
Department of Metallurgy		1,532
Department of Industrial Chemistry		2,125
School of Architecture		2,207
Department of Fuel Chemistry		443
Department of Hydrocarbon Chemistry		1,296
Department of Chemical Engineering (before 1961)		295
Department of Chemical Engineering (after 1961)		1,244
Department of Polymer Chemistry		1,225
Department of Textile Chemistry		250
Department of Applied Physics		116
Department of Electronic Engineering		1,606
Department of Aeronautical Engineering		810
Department of Nuclear Engineering		714
Department of Environmental and Sanitary Engineering		1,390
School of Applied Mathematics and Physics		1,448
Department of Precision Engineering		1,379
Department of Synthetic Chemistry		1,259
Department of Electrical Engineering II		1,447
Department of Metal Science and Technology		1,220
Department of Mechanical Engineering II		505
Department of Transportation Engineering		1,284
School of Architectural Engineering		1,149
School of Information Science		1,037
School of Engineering Science		480
(new) Undergraduate School of Chemical Science and Technology	213	6,240
(new) Undergraduate School of Engineering Science	237	6,105
Undergraduate School of Electrical and Electronic Engineering	124	3,289
Undergraduate School of Informatics and Mathematical Science	90	2,213
Undergraduate School of Civil, Environmental and Resources Engineering	193	4,470
(new) Undergraduate School of Architecture	77	1,966
Total	934	59,630

Foreign Students, Guest Scholars

Number of Foreign Students

As of May 1, 2023

Country/Region	Undergraduate School	Graduate School		Total
		Master's Program	Doctoral Program	
Asia (18)				
India			6	6
Indonesia	9	2	17	28
Cambodia	1			1
Singapore	1	1		2
Sri Lanka	3		1	4
Thailand	6	3	12	21
Korea	17	7	12	36
Taiwan	7	2	8	17
China	74	92	157	323
Nepal			2	2
Pakistan			1	1
Philippines	2	2		4
Bhutan		1		1
Vietnam	2	1	8	11
Hong Kong	1		1	2
Malaysia	3	2		5
Myanmar	6		4	10
Mongol	1			1
Middle East (4)				
Iran	1		3	4
Oman		1	1	2
Saudi Arabia			1	1
Syria		1	2	3
Africa (10)				
Algeria			2	2
Uganda		1	1	2
Egypt		1	3	4
Ethiopia			1	1
Cameroun			1	1
Kenya		1	2	3
Tanzania			1	1
Tunisia		1	2	3
Madagascar			1	1
Mozambique		1		1
Oceania (2)				
Solomon Islands			1	1
Fiji		1		1
North America (2)				
United States of America	1		2	3
Canada	1		2	3
Latin America (6)				
El Salvador		1		1
Colombia			2	2
Chile			1	1
Brazil	1		1	2
Venezuela		2		2
Peru	1			1
Europe (including NIS countries) (7)				
Uzbekistan			1	1
United Kingdom			2	2
Greece		1		1
Kyrgyz			1	1
Germany			1	1
France			1	1
Portugal			2	2
Total (49 countries/regions)	138	125	267	530

Number of International Research Students

Country/Region	Research Student	Special Auditing Student	Special Research Student	Short-term International Student	Total
Asia (4)					
Thailand	1				1
Korea	1	1			2
Taiwan	1				1
China	11	2	4		17
Middle East (1)					
Turkey	1				1
Africa (1)					
Malawi	1				1
North America (1)					
United States of America		1			1
Europe (including NIS countries) (6)					
Italy		2			2
Switzerland				1	1
Sweden		2			2
Spain	1				1
Germany		2			2
France		3		2	5
Total (13 countries/regions)	17	13	4	3	37

As of May 1, 2023

Number of Guest Scholars

Academic Year 2022/23

Country/Region	Guest Scholar	Guest Research Associate	Visiting Research Scholar	Total
Asia (7)				
India	2	1		3
Indonesia	1	4		5
Pakistan		1		1
Malaysia	2	2		4
Korea	1	6		7
Taiwan		1		1
China	10	23		33
Africa (1)				
Egypt	1	2		3
Oceania (1)				
Australia	1			1
North America (2)				
United States of America	2	1	1	4
Canada	1	1	1	3
Latin America (3)				
Colombia		2		2
Brazil		1		1
Mexico	1	1		2
Europe (including NIS countries) (12)				
Italy	1	4		5
United Kingdom	1	2		3
Netherlands	1			1
Switzerland		1		1
Spain	1	2		3
Czech		1		1
Germany	2	8		10
Norway		1		1
France	3	1		4
Lithuania		1		1
Russia		2		2
Poland			1	1
Total (26 countries/regions)	31	69	3	103

Research Students

Number of Research Students and others

Departments /Undergraduate Schools	Research Student	Research Fellow	Special Auditing Student	Special Research Student	Short-term International Student	Total
Department of Civil and Earth Resources Engineering	1 [1]		1 [1]			2 [2]
Department of Urban Management	2 [2]		1 [1]		1 [1]	4 [4]
Department of Environmental Engineering	2 [2]			1		3 [2]
Department of Architecture and Architectural Engineering	4 [4]		2 [2]	2 [2]		8 [8]
Department of Mechanical Engineering and Science	1	2	1 [1]			4 [1]
Department of Micro Engineering			1 [1]	1		2 [1]
Department of Aeronautics and Astronautics						
Department of Nuclear Engineering		1	1 [1]			2 [1]
Department of Materials Science and Engineering	2 [2]					2 [2]
Department of Electrical Engineering	2 [2]	2		1 [1]		5 [3]
Department of Electronic Science and Engineering						
Department of Material Chemistry	1 [1]	2		7		10 [1]
Department of Energy and Hydrocarbon Chemistry				1		1
Department of Molecular Engineering	1 [1]					1 [1]
Department of Polymer Chemistry	1 [1]	1		3 [1]		5 [2]
Department of Synthetic Chemistry and Biological Chemistry	1 [1]					1 [1]
Department of Chemical Engineering						
Undergraduate School of Civil, Environmental and Resources Engineering						
Undergraduate School of Architecture		1	1 [1]			2 [1]
Undergraduate School of Engineering Science			2 [2]			2 [2]
Undergraduate School of Electrical and Electronic Engineering			1 [1]			1 [1]
Undergraduate School of Informatics and Mathematical Science			1 [1]			1 [1]
Undergraduate School of Chemical Science and Technology			1 [1]		2 [2]	3 [3]
Total	18[17]	9	13[13]	16 [4]	3 [3]	59[37]

As of May 1, 2023

Note 1: The numbers in parentheses [ ] indicate the number of foreign students, and are included in the regular figures.

Note 2: The number of Research Fellows includes the numbers of Research Fellows, entrusted researchers, and research fellows of the Japan Society for the Promotion of Science (PD).

Book (Number of books)

Library Collection

As of May 1, 2023

Library Name	Book (Number of books)			Magazine (Number of titles)		
	Japanese	International	Total	Japanese	International	Total
Katsura Library	124,313	194,429	318,742	2,516	5,679	8,195
The North Library, Graduate School of Engineering and Faculty of Engineering	9,930	1,40	11,339	26	3	29
The South Library, Graduate School of Engineering and Faculty of Engineering	27,057	27,050	54,107	839	777	1,616
Total	161,300	222,888	384,188	3,381	6,459	9,840

Access to the website
Facts and Figures

Access Map

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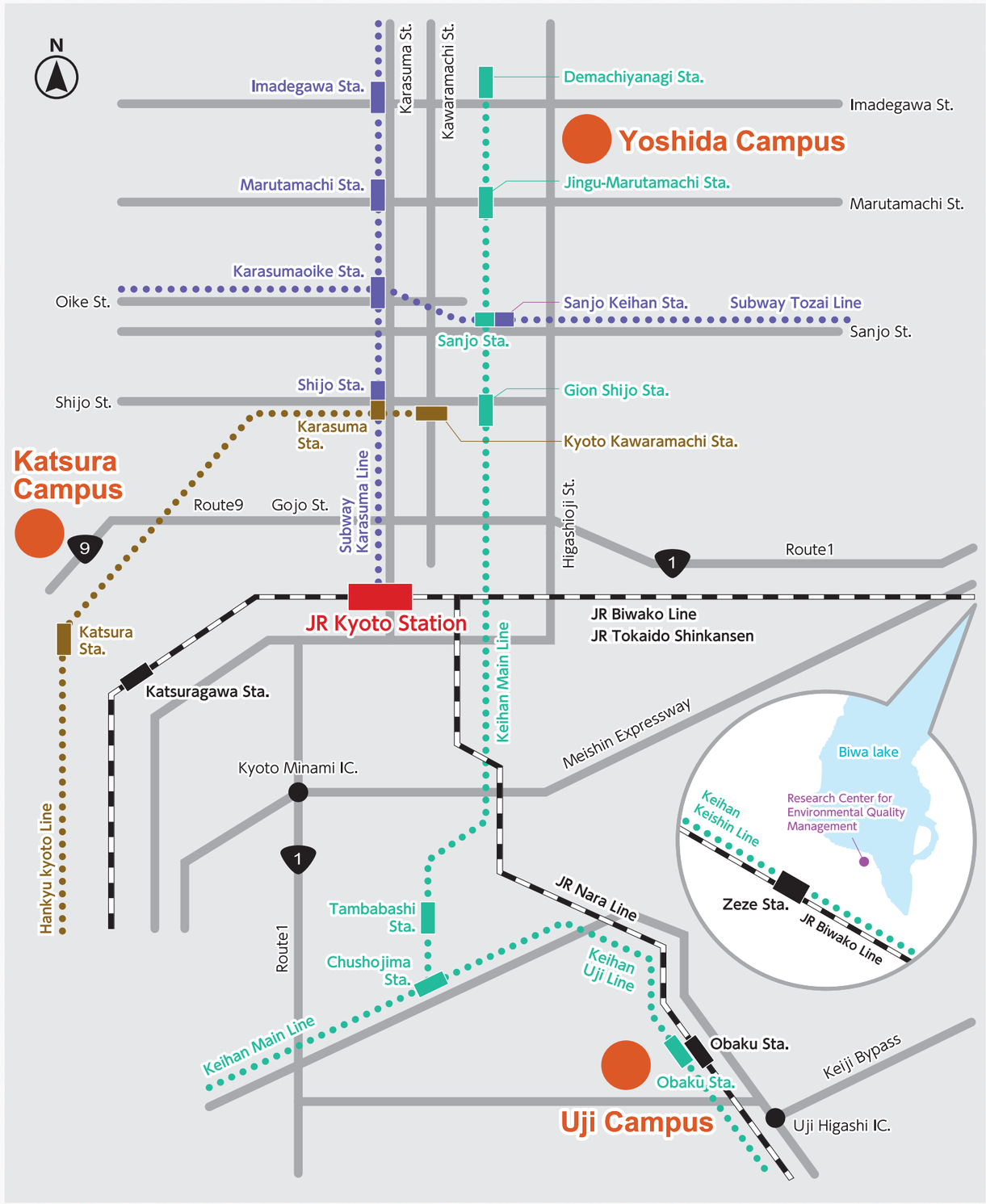
Engineering HP

Kyoto University HP

Access from International Airports

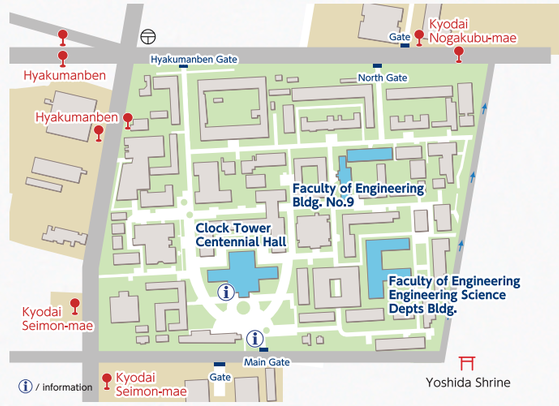
JR Kyoto Station

- Airport Limousine Bus, Approx. 50 min. → **Osaka International Airport (Itami)**
- JR Airport Express "Haruka", Approx. 75 min. / Airport Limousine Bus, Approx. 105 min. → **Kansai International Airport**
- Keihan Kyoto Kotsu Bus: No. 21 or 21A, Get off at "Kyodai Katsura Campus-mae", Approx. 45min. / Taxi: Approx. 35 min. → **Katsura Campus**
- **Hankyu Railway Katsura Sta.**: Keihan Kyoto Kotsu Bus: No. 20 or 20B; City Bus: West No. 6; Get off at "Kyodai Katsura Campus-mae", Approx. 12 min. / Taxi: Approx. 10 min. → **Katsura Campus**
- City Bus: No. 206, Get off at "Kyodai Seimon-mae", Approx. 30 min. / Taxi: Approx. 30 min. → **Yoshida Campus**
- Local Train: JR Nara Line, Get off at "Obaku", Approx. 20-25 min. → **Uji Campus**



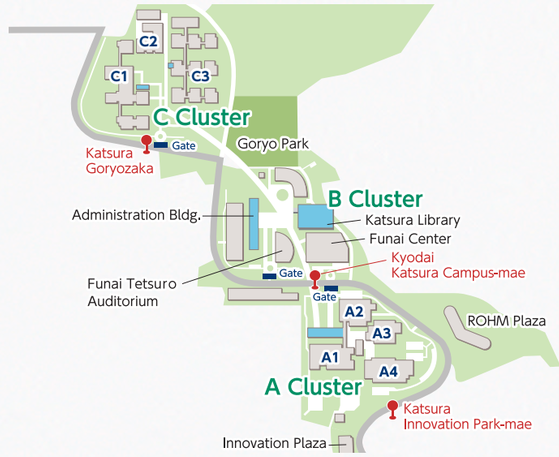
Kyoto University Yoshida Campus

Yoshida-Honmachi, Sakyo-ku, Kyoto 606-8501



Kyoto University Katsura Campus

Kyoto Daigaku-Katsura, Nishikyo-ku, Kyoto 615-8530



Kyoto University Uji Campus

Gokasho, Uji, Kyoto 611-0011