

KOGAKUIN UNIVERSITY



GRADUATE SCHOOL OF
ENGINEERING



Message from the President



The “Mind of **Kou** (Engineering)”—which widely connects the leading edge of education and research with society and industry is the spirit of foundation and school motto of Kogakuin University.

Kogakuin University has a long history, as it was initially founded in 1887 as Koshu Gakko by Koki Watanabe. It was the first private engineering school established in Japan, with a goal of training engineers who would be prepared to work on the front lines of the industries that were needed for promoting Japan’s modernization. In 1949, Kogakuin University was approved under the new education system by the Ministry of Education, Science and Culture of Japan. It is our great honor that many of our alumni play important roles in the world of industry.

Kogakuin University will continue to pursue bold innovation and further growth into the future. Our goal is to provide core support for the scientific and technological country of Japan and for the development of the global society by fostering excellent engineers, architects and researchers who can innovate and solve global problems through the power of science and technology. For this purpose, we have the School of Advanced Engineering, Faculty of Engineering, Faculty of Informatics, and School of Architecture for undergraduate students. The Doctor and Master courses in the fields of Mechanical Engineering, Applied Chemistry and Chemical Engineering, Electrical Engineering and Electronics, Informatics, Architecture, Systems Design (Master only) are also provided for graduate students from all over the world.

There are still many unrevealed domain in the world of science and technology, and elucidating them brings progress toward a future society—commonly called the Super Smart Society. In other words, science and technology evolve infinitely, and at the same time the possibilities extend infinitely for each of you. As expressed in our university’s philosophy of bringing infinite possibilities to fruition, it is our great pleasure to support you make the most of your endless possibilities.

Mitsunobu Sato

President

Graduate School Committee Chairman

Professor, Applied Chemistry and Chemical Engineering Program

Graduate School of Engineering Philosophy and Goals

■ Educational and Research Goals

The ultimate goal of Kogakuin University's Graduate School of Engineering is to contribute to society and humanity by conducting creative, high-level research. It also aims to foster engineers and researchers who possess deep knowledge and applied skills pertaining to the laws and principles of their various fields and base their decisions on interdisciplinary perspectives. With that in mind, its specialized instruction provides the basis for the master's programs to train specialized engineers and researchers. Furthermore, the doctoral programs give engineers and researchers the high degree of specialization to be able to break new ground in cutting-edge research fields.

Graduate School of Engineering Outline

■ Graduate School of Engineering

Kogakuin University's Graduate School of Engineering established a master's program in April 1964 and a doctoral program in April 1966 for the purposes of researching and teaching engineering theory and applications based on the foundations of undergraduate education. In 1977, the graduate school's code was changed, and these programs were unified under one administration. The master's programs are generally two years long while the doctoral programs are three. The graduate school offers education and research through its six programs—based on several departments in the respective engineering, architecture, informatics, and global engineering faculty/school—and we have assembled a diverse faculty team that covers various specialized fields in broad disciplines.

■ Study at the Graduate School

Education in the Graduate School of Engineering consists of classes based on course subjects (credit-based, for master's programs only) and research-related instruction pertaining to degree thesis preparation. Courses in the master's programs are divided into specialized courses required for the program and other electives. The specialized courses for the mechanical engineering, applied chemistry and chemical engineering, electrical engineering and electronics, and informatics programs consist of lectures (two credits) and practicals (eight credits). The architecture program consists of practicals (eight credits). Please refer to the "Graduate School of Engineering Studies Guide" for information about the systems design program. Students decide their programs upon enrollment, and the faculty members of those programs become their faculty advisors. We have also established a system of instruction under which assistant faculty advisors are chosen to allow meticulous instruction by multiple faculty advisors, providing graduate students with powerful support for their studies.

■ Course Completion Requirements and Credits

Master's programs

Students complete master's programs by passing the master's thesis review and final examinations after acquiring the minimum prescribed 30 course credits (37 for the systems design program) during two or more years of study, as well as receiving the required research instruction. However, anyone who produces outstanding research work may complete the program after a year or more of enrollment. Anyone who completes a master's program receives a master's degree in engineering, although students in the informatics, architecture or systems design programs can instead receive a master's degree in informatics, architecture or system design, respectively.

Doctoral programs

Students complete doctoral programs by passing the doctoral thesis review and final examinations after receiving the required research instruction during the three or more years of study. However, anyone who produces outstanding research work may complete the doctor's program after a year or more of enrollment. Anyone who completes the program is conferred a PhD in engineering, while students in the informatics or architecture programs can receive a PhD in informatics or architecture, respectively.

Support Programs for Graduate School Activities

► Diverse Faculty and Meticulous Instruction

Our graduate school's diverse faculty makes the most of its abundant experience to cover the areas required for the respective six programs, providing advanced instruction based on course subjects. Meticulous guidance in terms of both studies and research is also provided through our multiple faculty advisor system.

► A Graduate School That Welcomes Social Diversity

We seek to admit diverse students from a wide range of fields, welcoming them from other universities as well as our own undergraduate alumni, along with working adults and international students. We offer advanced placement and accelerated course completion programs for particularly outstanding students. Furthermore, special screenings are conducted for working adults separately from our general entrance examination. We have systems in place to enable adults to study at graduate school while working. Specifically, we offer alternating daytime and evening lectures in alternate years for master's programs and a two-semester system with enrollment in April and October. There is an increasing number of Kogakuin undergraduate alumni who choose to enroll in our graduate school after working for some time.

► Support for Research Activities

We offer a full range of programs to support research presentations, encouraging our graduate school students to publicize their research. We provide a standard travel expense package for round-trip economy airfares when graduate students present research papers at international academic conferences overseas, as well as assistance for travel, participation and lodging expenses for domestic presentations. Numerous graduate students receive this support every year. Additionally, we have set up courses such as Presenting Technological Research in English—taught by native speakers—to develop the skills needed for presentations at international conferences. We also provide training in English-language presentation and discussion skills. There is a program to award outstanding theses, recognizing papers presented by students that have been published in peer-reviewed academic journals and given high recognitions. Recipients receive certificates at their commencement and a ¥50,000 supplementary prize.

International Partners

Academic Exchange



► Reasonable Tuition, TA Programs and a Tuition Exemption Program to Encourage Enrollment in Graduate School

Tuition at our graduate school is kept reasonable compared to other graduate schools to provide opportunities to a broad range of people with an ambition to learn. Our teaching assistant (TA) program—part of our research and educational efforts—provides students with opportunities to demonstrate the results of training and ameliorate their financial burden. Graduate students assist with classes according to the instructions of the faculty members, and receive prescribed salaries for this work. The salary for handling a class two hours a week (one time block) would be ¥12,500 per month. Students are allowed to work for up to six hours per week (three time blocks) each year so that their duties do not disrupt their studies. We have also created a tuition reduction program to encourage outstanding students to enroll in graduate school that cuts annual tuition for those enrolled in master's or doctoral programs by half.

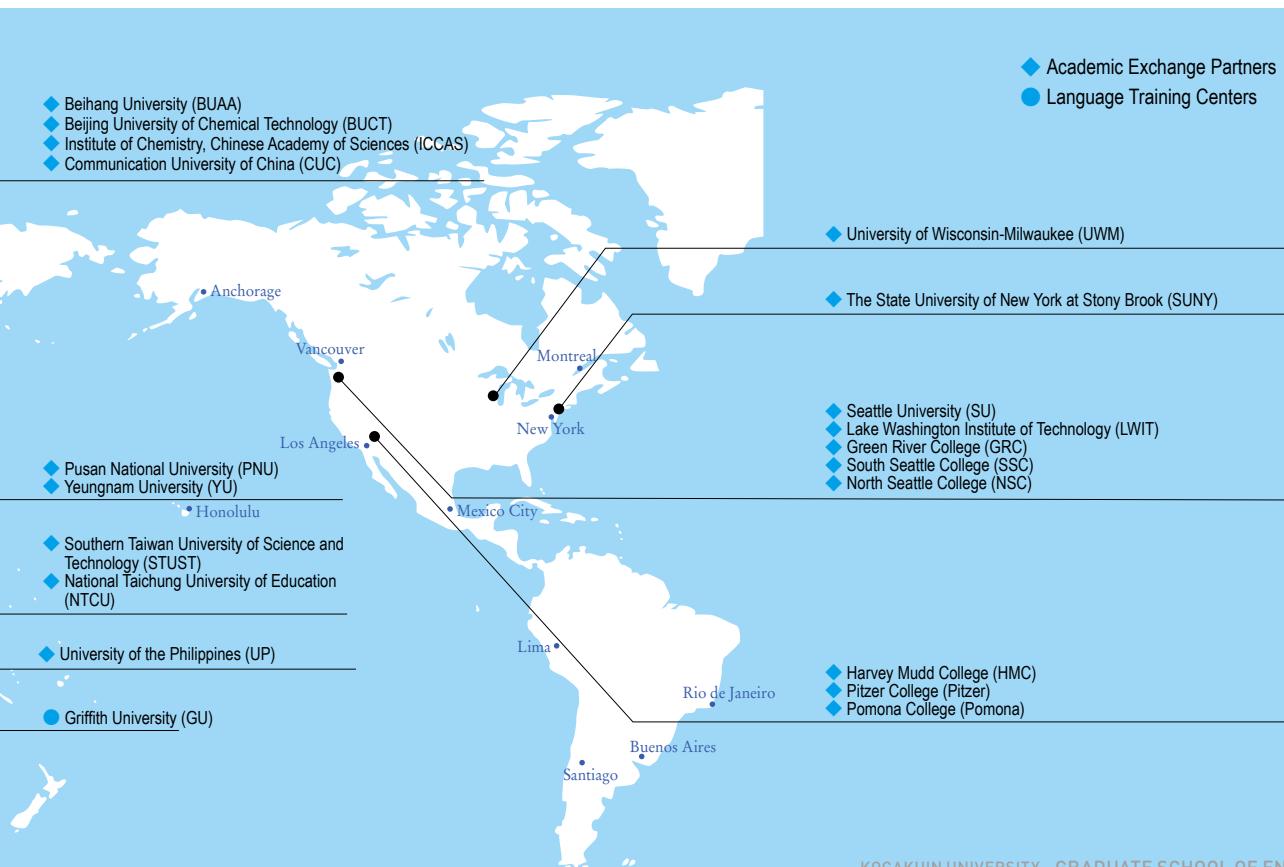
► Excellent Research Environment

When we think about the essence of science and technology, training sophisticated engineers without research is inconceivable. The faculty at our graduate school is constantly engaged in diverse research activities together with students at our excellent research facilities, which include the sophisticated measurement devices and equipment required for cutting-edge research.



There is a strong demand for engineers who can work internationally in the present century.

Our university has concluded partnership agreements with thirty-four overseas educational institutions, and is promoting interaction through academic exchanges and language training. Students in all faculties/schools can enroll in the language-training courses and receive course credits upon completion. The interaction is lively among students that come from or visit partner schools that carry out academic exchanges, such as jointly sponsored international symposia, summer campus activities and workshops.



Mechanical Engineering Program

Acquire advanced expertise, a broad perspective and flexibility



Philosophy and Goals

Mechanical engineers are required to possess sophisticated expertise and broad discernment to be able to offer solutions for problems such as environmental pollution, global warming and energy-related issues. This program offers about sixty course subjects in the master's program to enable students to acquire everything from diverse fundamental mechanical engineering skills to cutting-edge specialized expertise. This allows them to acquire additional high-level, advanced and more finely specialized skills after they gain expertise in basic mechanical engineering fields. Our training creates self-reliant, high-level engineers who can play roles internationally through having them learn these subjects and prepare the required master's thesis.

Educational Goals

We train students to:

1. Develop wide-ranging discernment and a high degree of flexibility after they acquire specialized expertise in everything from the basics of mechanical engineering to cutting-edge skills.
2. Play crucial roles in society, learning about theory and acquiring expertise as well as acquiring the skills to unearth issues and solve problems through their research activities.
3. Always keep their eyes on scientific and technological trends, and to acquire the habit of continuously honing their own expertise and skills.
4. Acquire communication and presentation skills that are also recognized in other countries.
5. Develop the leadership qualities that allow them to flexibly use organizational and team capabilities.

Research fields

- Energy engineering
- Materials and process engineering
- Design engineering
- Measurement controls and robotics
- Systems engineering

Teacher's licenses and curator's credentials available:

Master's degree holders who fulfill the prescribed requirements can acquire specialized junior and senior high school teacher's certificates. The specialized teacher's certificates this graduate school offers are listed below. A type 1 license is a prerequisite for acquiring a specialized teacher's certificate, but that can be acquired by auditing undergraduate courses if the student does not have one.

- Specialized junior high school teacher's certificate (technology)
- Specialized senior high school teacher's certificate (technical)
- Curator's credentials

The undergraduate department offers curator's credentials courses, but students can obtain these credentials by auditing undergraduate courses.

Research Fields and Topics, Educational Keywords

Research fields	Energy engineering	Materials and process engineering	Design engineering	Measurement control and robotics	Systems engineering
Topics	Aerodynamic characteristics of soccer balls	Development of tribomaterial based on CFRP	Analysis of impact on human heads	Growing humanoid robots	Study on insect model micro-robots
	Alternative fuel for reciprocating engine	Manufacturing and shaping of metal foam	Development of highly reliable bonded dissimilar materials	Robust adaptive control theory	Electronic stability control in cornering
	Development of swarm underwater robots	Precision forging and rolling processing of parts of complex shapes	Medical implant	Enrich your life with smart devices	Effect of dynamic stimulation on differentiation of myocytes
	Study on flow instabilities in axial-flow	Precision processing of 3D fine shapes	High performance design of device, etc.	Control of artificial heart rate	Study on microscopic work support systems
	Study on amount of heat transfer through boiling and condensation	Study on highly efficient method of functional materials	Reduction of mechanical vibration and noise	Development of communication system of rescue robots	Markerless motion capture method
	Biomass fuel processing through thermal decomposition reaction		Prediction of sound absorption rate and design of sound absorbing materials		Planning and evaluation of integrated transport systems
	Hydrogen fuel system for fuel cell		Evaluation on impact and dynamic behavior on sports equipment		Dynamic analysis of tires
Educational keywords	Visualization of flow	Composite material	Fusion between art and engineering	Robots	Insect model micro-robots
	Engine, combustion, lubrication	Production technology	Safety, design engineering	Control engineering	Control of automobile movement
	Ship	Hard-to-process materials	CAD/CAM/CAE, enhancement of high performance	Smart device	Artificial internal organs
	Synthetic jet	Micro processing	Vibration	Medical device	Image processing
	Boiling and condensation heat transfer	Production engineering	Automobile	Rescue robots	Biomechanics
	Pyrolysis gasification and liquefaction	Light-weight material	Sports engineering		Systems engineering
	Fuel cell				Elastomer
	Computational fluid dynamics				

Curriculum system

Mechanical Engineering Program

★Specialized courses

	Energy engineering	Materials and process engineering	Design engineering	Measurement control and robotics	Systems engineering
Doctoral program	Fluids Engineering Turbomachinery Environmental Energy Engineering Heat Transfer Engineering	Precision Machining Nano-Processing Engineering	Machine Elements and Design Fatigue Strength of Materials Material Mechanics	Sensor Engineering Hydraulics and Pneumatics	Microsystem Engineering Vehicle Dynamics Biomechanics
Lecture courses					
<ul style="list-style-type: none"> ★ Fluids Engineering ★ Turbo Machinery ★ Propulsion and Resistance Engineering ★ Heat Transfer Engineering ★ Internal Combustion Engine ★ Recycle Engineering ★ Energy Engineering Fluid Mechanics Measurements Compressible Fluid Dynamics Large-scale Computational Fluid Dynamics Combustion Engineering Thermodynamics ★ Precision Machining ★ Mechanics of Materials Processing ★ Materials Processing ★ Polymer Processing ★ Simulation of Mechanical Materials ★ Rheology in Polymer Processing ★ Advanced Machining ★ Mechanical Vibrations ★ Fatigue Strength of Materials ★ Computational Mechanics ★ Machine Elements and Design ★ Rotor Dynamics ★ Mechanics of Materials ★ Sound and Vibration ★ Impact Engineering ★ Hydraulics and Pneumatics ★ Sensor Engineering ★ Biomedical Measurements ★ Robotics ★ System Control Engineering ★ Motion and Intelligence Simulation ★ System Integration ★ Biomechanics ★ Planning Engineering ★ Vehicle Dynamics Engineering ★ Microsystem Engineering ★ Tire Mechanics ★ Man-Machine Interface ★ Musculoskeletal Systems in Human Dynamics Sports Fluid Dynamics System Engineering 					
Seminars and practicums					
<ul style="list-style-type: none"> ★ Development of Professional Engineers / Applied Functional Analysis / Analytical Mechanics / Radiation Detection and Measurement / Intercultural Interaction / Postgraduate Integrated Skills in English / Presenting Technological Research in English / Guided Research in English / Advanced English Lecture Series / Pedagogy ★ Advanced mechanical engineering lectures and seminars (A, B, C, D) 					

Applied Chemistry and Chemical Engineering Program

For students seeking to become engineers able to play roles in all the various fields related to chemistry



Philosophy and Goals

For humanity to endure, we will need advanced material conversion technologies to enrich our lives; promote the biotechnology required in the life science, pharmaceuticals and foodstuff sectors; develop environmentally friendly materials, resource and energy-saving technologies; and devise the environmental systems required for coexistence with natural ecosystems. This program trains engineers and researchers to handle the challenges of interdisciplinary fields that are even more advanced than the usual specialized fields so that they can use their grounding in chemistry to provide solutions related to these vital issues.

Educational Goals

We train students to:

1. Acquire practical, specialized expertise in everything from the basics of chemistry to cutting-edge technologies and practical skills—underpinned by profound knowledge of the fundamentals and principles of chemistry—in one of the fields of material conversion chemistry, biotechnology, environmental materials, and resource and energy conservation systems. They also pursue wide-ranging studies in other fields so they can provide solutions for the key issues noted in our philosophy and goals above.
2. Develop strong problem-solving skills (technology development skills) in one of the specialized fields and pursue wide-ranging studies in other fields. We also ensure that they can identify the underlying causes of problems, unearth issues and select and develop methods of analysis, organization and research (experiment) through research activities and discussions with faculty advisors.
3. Build communication and presentation skills that are also applicable in other countries, and that they improve these skills by presenting research results at workshops and academic conferences in Japan and other countries.

Research fields

- Life sciences
- Organic chemistry
- Inorganic chemistry and metals
- Environment and systems

Teacher's licenses and curator's credentials available:

Master's degree holders who fulfill the prescribed requirements can acquire specialized junior and senior high school teacher's certificates. The specialized teacher's certificates this graduate school offers are listed below. A type 1 license is a prerequisite for acquiring a specialized teacher's certificate, but that can be acquired by auditing undergraduate courses if the student does not have one.

- Specialized junior high school teacher's certificate (science)
- Specialized senior high school teacher's certificate (science and technical)
- Curator's credentials

The undergraduate department offers curator's credentials courses, but students can obtain these credentials by auditing undergraduate courses.

Research Fields and Topics, Educational Keywords

Research fields	Life sciences	Organic chemistry	Inorganic chemistry and metals	Environment and systems
Topics	Development of in vitro angiogenesis model	Synthesis of polycyclic natural products based on the new tandem-cyclization that we originally developed	Structure and properties of glass/ceramics	Development of water treatment systems with membranes
	Cell culture using collagen fibrils from sea cucumber	Synthesis of macrolide antibiotics based on acyclic stereocontrol methods	Development of superionic conducting glass-ceramics	Development of membrane bio reactor
	Production of useful materials and biofuel by aerial microalgae through photosynthetic CO ₂ fixation	Medicinal chemistry programs focused on kynurenine pathway, signal transduction, DNA repair system	Anodization of valve metals and functionalization of anodic oxide films	Abatement of VOCs and ultrafine particles in surroundings using ultrasonic atomization
	Development of environmental remediation systems by microorganisms	Identification of novel drug targets based on chemical biology	Nano/micro fabrication of semiconductors based on wet process	Removal of particles adhered on a surface by consecutive pulse air jets
	Biomedical importance of mammalian chitinases	Higher order structure changes of rubber materials under the high pressure hydrogen gas exposure	Fabrication of photovoltaic and conductive thin films	Electrochemical studies on ozone water production system and development of gas-liquid mixing system
	Structure-function relationship for hydrolytic enzymes	High thermal conductivity polymers, liquid crystal polymers	Fabrication of thin-film lithium-ion-battery	Modeling and development of Li-air battery materials
	Chemical analysis and characterization on flavor of foods	Development of repeatable adhesion system by using polymer brush thin films	Catalytic performance of supported metal catalyst	Modeling and development of polymer electrolyte fuel cell
	Molecular analysis of the regulation of nitrogen metabolism in plants	Antifouling surface developed by amino acid-based polyzwitterionic brushes	Characterization of supported metal by means of X-ray absorption fine structure	Silica membranes for gas separation and membrane reactors for hydrogen production
			Manipulation using nan pipettes	Methodology development for the evaluation of company's environment performance
			Manipulated single molecules on surfaces with scanning probe microscope	Sustainable consumption based on the consumer's behavior
			Trials for multi-functionalization on polymer based materials through forming thin film	A simple bioassay using fluorescent materials and Daphnia magna
Educational keywords	Extracellular matrix	Natural product synthesis	Glass/ceramics science	Membrane technology
	Collagen	Organic chemistry	Surface/interface science	Hydrogen separation
	Microorganism	Drug discovery	Nano/micro science	Water treatment
	Bioactive compound	Natural products chemistry	Electrochemistry	Air purification
	Human diseases	Functional polymers	Thin film	Dry surface cleaning
	Hydrolytic enzymes	Relationships between structures and properties	Solar cell & storage battery	Ozone-water
	Food processing	Polymer synthesis	Heterogeneous catalysis	Environmental and energy materials
	Plant physiology	Functional polymer surface	Metal-supported catalyst	Experiment integrated computational chemistry
			Nanoprobe	Membrane process
			Nanopipette	Environmental analysis
			Environmental material science	

Curriculum system

Applied Chemistry and Chemical Engineering Program

★ Specialized subjects

	Life sciences	Organic chemistry	Inorganic chemistry and metals	Environment and systems
Doctoral program	Biotechnology Cell Technology	Synthetic Organic Chemistry	Crystal Chemistry Amorphous Materials Science	Diffusional Separation Processes
Lecture courses				
	★ Cell Technology ★ Biotechnology ★ Bioformation Chemistry Bio-resource Chemistry Molecular Basis of Biology Genome Chemistry	★ Physical Chemistry of Polymers ★ Food Chemical Engineering ★ Synthetic Organic Chemistry ★ Organic Polymers ★ Bioorganic Medicinal Chemistry Organic Reaction	★ Crystal Chemistry ★ Material Science of Solids ★ Amorphous Materials Science ★ Nano and Micro Structure Control Science ★ Nano Chemistry Environmental Material Engineering Surface Chemistry	★ Diffusional Separation Processes ★ Environmental Management Engineering ★ Multi-Scale Computational Chemistry ★ Atmospheric Environment Engineering ★ Catalyst Chemistry ★ Environmental Systems Engineering ★ Environmental Analytical Chemistry ★ Separation Engineering Biochemical Engineering Catalytic Reaction Engineering
Intercultural Interaction / Postgraduate Integrated Skills in English / Presenting Technological Research in English / Guided Research in English / Advanced English Lecture Series / Advanced Applied Chemistry and Chemical Engineering A & B / Pedagogy				
Seminars and practicums				
★ Advanced applied chemistry and chemical engineering lectures and seminars (A, B, C, D)				

Electrical Engineering and Electronics Program

A program for engineers who want to play active roles in supporting society



Philosophy and Goals

Electrical and electronic engineering technologies underpinned the foundations and development of Japanese industry. We have enjoyed the benefits of the information society in recent years, but at the same time been confronted by big new problems related to the environment and energy. We need to provide engineers with broad discernment and advanced specializations to support society. This program offers a curriculum consisting of core subjects that supplement the basic knowledge acquired in undergraduate studies and numerous specialized subjects for students to learn about advanced fields. Research activities are emphasized to help students build the ability to think for themselves and to uncover and solve problems.

Educational Goals

We train students to:

1. Develop profound expertise in specialized fields and broad knowledge in related fields.
2. Develop a pragmatic outlook and ability to think and to uncover and solve problems through research activities.
3. Develop communication and presentation skills that are also recognized in other countries through participation in academic conference activities in Japan and overseas.
4. Acquire the practical skills needed to respond to new worldwide technology trends, and the chance to acquire the mindset that they should continually study on their own initiative.

Research fields

- Energy conversion
- Measurement and controls
- Information and communications
- Electronic devices

Teacher's licenses and curator's credentials available:

Master's degree holders who fulfill the prescribed requirements can acquire specialized junior and senior high school teacher's certificates. The specialized teacher's certificates this graduate school offers are listed below. A type 1 license is a prerequisite for acquiring a specialized teacher's certificate, but that can be acquired by auditing undergraduate courses if the student does not have one.

- Specialized junior high school teacher's certificate (mathematics)
- Specialized senior high school teacher's certificate (mathematics and technical)
- Curator's credentials

The undergraduate department offers curator's credentials courses, but students can obtain these credentials by auditing undergraduate courses.

Research Fields and Topics, Educational Keywords

Research fields	Energy conversion	Measurement and control	Information and communication	Electronic devices
Topics	Traffic system control	Multi-functional sensor	Network	Various displays
	New solar cell	Robot development	Information search on the Internet	Semiconductor materials
	Various motors	Nano-level measurement	Communication software	Organic materials
	Power system with new functions	Bio and vital information	Image recognition	Light source for communication
	Magnetic application		Network computing	Environmental cleaning materials
	High energy			
Educational keywords	Railroad, automobile, energy-saving	Electronic circuit with sensor, superconductor evaluation, noncontact measuring	Mobile communication, photonic, cloud service	Liquid crystal, electroluminescence, electronic paper, next-generation display
	Energy conversion material, eco-material	Cooperative control, intelligent control, autonomous robot	Ubiquitous, distributed information system, image search	Semiconductor crystal growth
	Linear motor, coreless motor, actuator	Electron microscope, image processing, PM 2.5	Provision of service	Nanotechnology
	Connection of solar and wind power generation	Organism measuring, medical-engineering collaboration	Face, object	LED, semiconductor laser, electroluminescence
	Hard drive		Mass data processing, search engine	Recycle, thin film
	Aerospace material, elementary particle reaction			

Curriculum system

Electrical Engineering and Electronics Program

★ Specialized subjects

	Energy conversion	Measurement and control	Information and communication	Electronic devices
Doctoral program	Electrical Equipment	Nanoelectronics Electron Optics Applied Microbeam Engineering Biomedical Informatics	Communication System Engineering Information & Communications Platform Coding and Information Theory Applied Optical Systems	Functional Thin Film Engineering Semiconductor Photonics Information Display Engineering
Lecture courses				
Master's program	★ Electric Power System ★ Electrical Equipment Electrical Power and New Energy Electrical Safety Engineering High Voltage Engineering	★ Modern Control Systems ★ Electronics for Transport ★ Electron Optics ★ Microbeam Engineering ★ Nanoelectronics Engineering I ★ Applied Instrumentation ★ Biomedical Informatics ★ Radiation Detection and Measurement ★ Control and Measurement Simulation of Transport Systems Nanoelectronics Engineering II Advanced Surface Instrumentation for Electrical Application Observational Astronomy Theoretical Astrophysics	★ Ubiquitous Computing ★ Digital Signal Processing ★ Operating Systems ★ Media Information Processing ★ Information & Communications Platform Engineering I ★ Applied Optical System Engineering ★ Data Science ★ Image Media Recognition ★ Advanced Network Architecture ★ Access Network Engineering Three-Dimensional Image Measurement Image Science and Technology Information and System Engineering in Education Optical Network Optical Wireless Communication System Coding and Information Theory Information Storage Engineering Internet Technology Media Information Communication Information & Communications Platform Engineering II Computer-Human Interaction	★ Semiconductor Photonic Devices ★ Thin Film Formation Technology ★ Semiconductor Photonics ★ Electronic Display ★ Applied Spectroscopy I ★ Theoretical Particle Physics ★ Crystal Chemistry of Material Science Information Display Engineering Simulation of Electronic Devices Quantum Electronics Electron Device Engineering I Electron Device Engineering II Solid State Electronic Engineering Electronic Material Engineering Optical Material Engineering Quantum Physics Applied Spectroscopy II
Seminars and practicums				
	★ Advanced electrical engineering and electronics lectures and seminars (A, B, C, D)			

Management Engineering 1 / Management Engineering 2 / Applied Functional Analysis / Applied Analysis / Functional Equations / Differential Equations / Intercultural Interaction / Postgraduate Integrated Skills in English / Presenting Technological Research in English / Guided Research in English / Advanced English Lecture Series / Internships / Pedagogy

Seminars and practicums

Informatics Program

Training the next generation of IT leaders



Philosophy and Goals

Built on five pillars of basic studies, engineering, social sciences, a fusion of these and interdisciplinary fields, and unexplored fields, this program is designed to broadly cover everything from hardware to software, including basic math theory, the technology of networks—as symbolized by the Internet and mobile devices—and security and its applications. We also cover various software technologies and computer architecture, media processing technologies and their applications in such things as welfare and in recognizing humans and objects, artificial intelligence, human engineering, and, finally, the social sciences. Industry-government-academia collaborations are actively promoted from an educational standpoint.

Because information technology is more than just an element of engineering, this goal-oriented program also seeks out people with basic expertise and an interest in information technology, including degree holders from undergraduate liberal arts courses.

Educational goals

We train students to:

1. Become the next generation of IT leaders
2. Provide pleasant living environments for people
3. Inculcate the skills to uncover and solve problems

Research fields

- Basic studies
- Engineering
- Social sciences
- Interdisciplinary fields
- Unexplored fields

Teacher's licenses and curator's credentials available:

Master's degree holders who fulfill the prescribed requirements can acquire specialized junior and senior high school teacher's certificates. The specialized teacher's certificates this graduate school offers are listed below. A type 1 license is a prerequisite for acquiring a specialized teacher's certificate, but that can be acquired by auditing undergraduate courses if the student does not have one.

- Specialized junior high school teacher's certificate (mathematics)
- Specialized senior high school teacher's certificate (mathematics and informatics)
- Curator's credentials

The undergraduate department offers curator's credentials courses, but students can obtain these credentials by auditing undergraduate courses.

Research Fields and Topics, Educational Keywords

Research fields	Basic studies	Engineering	Social science	Interdisciplinary fields	Unexplored fields
Topics	Numerical computing	Acoustic processing	Management informatics	Human interface	Intellectual information processing
	Parallel processing	Music information processing	Corporate information system	Natural language processing	Biological information processing
	Numerical analysis	Security	Marketing	Multimodal processing	Signal processing
	Control system design	Image processing	Cyber security	Database	Visual information processing
	Mathematical programming	Media processing	Physical security	Information contents design	Psychophysics
	Algorithms	Mathematical analysis	Safety system	Sensibility interface	Information visualization
	Software engineering	Sensor data analysis	Information security education	Human interaction	Data mining
	Requirements engineering	Learning theory		Interactive media	Bayesian statistics
Educational keywords	Automatic software tuning	Acoustic simulation	Big data	Support of disabled persons	Brain-machine interface
	High-performance computing	3D audio	Internet of things	Ambient intelligence	Interface evaluation
	PC grid	Network security	Real-world sensing	Corpus	Color vision processing
	Computational optimization	Computer tomography	Data processing architecture	Sensibility information	3D space recognition
	Automated verification	High-definition television	Content protection	Information retrieval	Information presentation system
	Requirements analysis	Machine learning	Authentication	Information recommendation	Auto sailing
	Software reuse	Behavior analysis	Access control	Dialogue scene analysis	Reinforcement learning
		Strategic decision-making		Communication support	

Curriculum system

Informatics Program

★ Specialized subjects

	Basic studies	Engineering	Social sciences	Interdisciplinary fields	Unexplored fields
Doctoral program	Computational Algorithms	Digital Signal Processing Image Reconstruction Image Characteristics Measurement Video Information and Processing Distributed Algorithms		Human Interface	
Master's program	Lecture courses				
	★ Computer Architecture ★ Software Bases ★ Parallel Algorithms ★ Software Engineering Operating Systems Language Processing Elementary Number Theory	★ Signal Representation for Acoustic Events Modeling ★ Signal Representation for Acoustic Events Modeling ★ Distributed Systems and Networks ★ Image Reconstruction ★ Image Characteristics Measurement ★ Video Information and Processing ★ Distributed Algorithms ★ Multi-sensor Data Analysis ★ Pattern Recognition ★ Mathematical Analyses Applied Statistics Color Information Processing	★ Quality and Security Management Information and System Engineering in Education Security Science	★ Human Interface ★ Natural Language Processing ★ Database Systems ★ Artificial Intelligence Numerical Simulation Information Content Design	★ Algorithms for Number Theory ★ Information and Visualization ★ Intelligent Information Processing ★ Human Visual System Object-oriented Programming Human Sensory Perception
	Intercultural Interaction / Postgraduate Integrated Skills in English / Presenting Technological Research in English / Guided Research in English / Advanced English Lecture Series / Internship / Pedagogy				
	Seminars and practicum				
	★ Advanced informatics lectures and seminars (A, B, C, D)				

Architecture Program

Acquire advanced, reliable skills and the creativity to design beautiful living environments



Philosophy and Goals

How to create and maintain comfortable, safe, affluent residential environments is both a goal and a significant concern in architecture. However, new issues have arisen in recent years, including the trend toward an aging society with fewer children, the information society, internationalization, and the ethics of architectural engineers.

This program helps students acquire a wide-ranging vision and advanced, specialized expertise and skills related to architecture and gives them an international orientation so they can devise solutions for the serious issues mentioned above.

Educational Goals

We train students to:

1. Follow the tradition of architectural education of the Koshu Gakko, and acquire practical architectural, urban and environmental planning and design skills that meet diverse social requirements.
2. Develop suitable architectural proposal skills that take a global view and are based on an understanding of specific cultural settings and their history, as well as environmental requirements.
3. Acquire advanced, specialized expertise along with pre-existing knowledge of architecture and urban planning, cultivate the skills to investigate and analyze with broad discernment, and resolve problems.
4. Develop the skills to provide creative proposals based on profound knowledge pertaining to the artistic and historical nature of architecture and urban planning.
5. Develop occupational skills related to architecture and urban design, and understand the social missions that come with those skills.
6. Understand the techniques and planning—including structures, construction methods and implementation—that ensure the safety and security of architecture and urban planning.
7. Understand the importance of a sustainable society from the standpoints of the environment, economy and society, and develop the expertise and skills to achieve that.
8. Cultivate the integrated skills needed to carry out architectural and urban development, including managing every aspect from planning to project execution as well as making adjustments for social and economic restrictions and requirements.
9. Develop the skills to demonstrate leadership in presenting one's ideas to wider society, and to collaborate with specialists from other fields and the general public.
10. Continuously study research design and planning methods through co-operation between faculty and students.

Research fields

- Architectural planning, architectural design, history of architecture, design theory, residential design, preservation, restoration and renovation
- Urban planning and design, environmental design, landscape planning, urban maintenance, disaster prevention and crime prevention in urban areas, town planning
- Seismic engineering, structural design, earthquake disaster prevention, wooden structures, reinforced concrete structures, steel structures, various kinds of structural engineering
- Construction method planning, building production, building economics and materials, architectural environmental engineering, building facilities engineering, architectural acoustics

Teacher's licenses and curator's credentials available:

Master's degree holders who fulfill the prescribed requirements can acquire specialized senior high school teacher's certificates. The specialized teacher's certificates this graduate school offers are listed below. A type 1 license is a prerequisite for acquiring a specialized teacher's certificate, but that can be acquired by auditing undergraduate courses if the student does not have one.

- **Specialized senior high school teacher's certificate (technical)**
- **Curator's credentials**

The undergraduate department offers curator's credentials courses, but students can obtain these credentials by auditing undergraduate courses.

Research Fields and Topics, Educational Keywords

Research fields	Design planning				Technology		
	Design and architecture	Urban planning and urban design	Architectural planning	Architectural history and conservation management design	Architectural structure	Building construction and management	Environmental facilities
Topics	Study on planning and design	Planning and realization of future visions for cities and towns	Study on the planning of educational facilities and environments	Study on technologies and policies to preserve historical buildings	Earthquakes and ground vibration simulation	Quality evaluation of building materials	R&D of new air-conditioning systems
	The possibility of new types of residences for contemporary families	Study on urban structure and land-use projects	Study on the construction of sustainable living environments in communities	Study on the urban fortifications in Belgium and France	Earthquake-resistance design methods for wooden residences	Architectural project management	Study on countermeasures for microorganism infection in air-conditioning systems
	Natural system-oriented design and planning	Study on methods of urban design management	Study on architectural furniture	Study on the theories and methods of preservation and reconstruction design	Reinforcing the earthquake-resistance of side walls through reinforcement panels	Recycling of building materials	Study on the change in the value of property due to the move towards energy-saving facilities
	Spatial studies	Landscape design for urban beauty	Study on the safety of medical and welfare facilities		Inspection of the safety of structures	Development of new building materials	Heat analysis of building envelopes and application in facade design
	Study of sustainable architectural space	Landscape design for post-disaster restoration	Environment-behavior studies		Strength analysis (buckling) and design of a dome structure	Application of BIM for construction activities	Study on environment- and disaster prevention-conscious urban infrastructure
	Study and design related to Japanese living spaces	Comprehensive urban disaster prevention strategies fit for the flow of the times					Study on methods to lower the environmental loads of cities and communities
	Study on the lineage of interior design						
Educational keywords	Architectural space design, residence and cities	Urban planning systems, restoration and invigoration	Study on architectural design, living environment	Conservation, traditional techniques, historical environment	Earthquake engineering, structural engineering, earthquake disaster prevention	Resource, raw materials, construction materials	Comfortable environment, sustainable architecture
	Environmental architecture, nature, plastic architecture	Regulation and guidance, city planning design	Coordination between health, medical and welfare fields	Urban history, infrastructure, modern architecture	Wooden structures, earthquake resistance capabilities, traditional wooden construction	Concrete, wood, finishing	Air quality, microorganisms, effects on health, water hazards
	Computational design	Urban construction, land-use projects	Sustainability, architectural furniture	Historical structures, preservation and restoration (reconstruction)	Large-scale wooden construction, earthquake resistance inspections	Components, byproducts, recycled materials	Air-conditioning system, thermal environment
	Relationship between humans and architecture	Suburban cities, social experiments	Mobile architecture	Utilization, station buildings	Steel-framed wet panels	Production, construction, management	Facility simulation, energy
	Compact city, sustainable architecture,	Landscape design, community resources	Hospitals, living facilities for the elderly, facilities for the disabled		Outer frame reinforcement, structural design, steel frames	PM, CM, FM, BIM	Greenhouse gasses, waste resource processing
	Tradition and the modern age	Updating urban foundations, resorts	Comfort, efficiency, safety		Dome structures, earthquake resistance and control		Disaster risk evaluation, environmentally-friendly architecture
	Scale, material and detail	Preservation and restoration of natural and cultural environmental characteristics	Quality of life, universal design				Eco-life, preservation of global environment
	Interior design, branding	Time-space scale, safety and security, ICT					Use of solar heat, energy-saving

Curriculum system

Architecture Program

	Design and planning				Technology		
	Design and architecture	Urban planning and urban design	Architectural planning	Architectural history and conservation management design	Architectural structure	Building construction and management	Environmental facilities
Doctoral program	Architectural Design Architectural Process	Urban Planning Environmental Ecology Urban Design	Architectural Planning Architectural Space Planning Facility Planning Environment Behavior	Architectural History in Japan	Wooden Structures Seismology and Disaster Management Architectural and Urban Disaster Management Structural Design Steel Structures	Building Construction System Building Materials Environmental Materials	Architectural Environment and Control Architectural Air Management Urban Environment Control
Master's program	Space Design Architectural Design I Architectural Design II Architectural Design III Architectural Design IV Architectural Design V Urban Design and Planning	Urban Planning Urban Design Urban Disaster Management Environmental Ecology Landscape Design Urban Regeneration	Architectural System Planning Architectural Product Design Healthcare and Welfare Facility Planning Building Environment Planning Environment Behavior Human Environment Planning	Modern Architectural History Preservation and Renovation of Architectural Works Architectural History in Europe Architectural History and Design Practice on Preservation and Renovation of Architectural Works	Wooden Structures Structural Dynamics Seismology and Disaster Management Reinforced Concrete Structures Structural Design Steel Structures Fundamentals of Architectural Engineering Assets Management Structural Planning	Production Systems Concrete Materials Building Construction Social Systems Environmental Management Architectural Economics	Simulation of Architectural Environment Indoor Climate in Architecture Indoor Air Environment Urban Environmental Engineering Architectural Facilities Architectural and Urban Energy Systems Applied Functional Analysis Architectural Acoustics
Lecture courses							
Master's program	Intercultural Interaction / Postgraduate Integrated Skills in English / Presenting Technological Research in English / Guided Research in English / Advanced English Lecture Series / Architectural design Internship 1 / Architectural Design Internship 2 / Environmental Facilities Internship / Structure Internship / Architectural Design and Practice A / Architectural Design and Practice B / Overseas Training Seminars / Pedagogy				Seminars and practicum		
	★ Advanced architecture lectures and seminars (A, B, C, D)						

Systems Design Program

JABEE accreditation

For students who want to become engineers, acquire management sensibilities and even work overseas



Philosophy and Goals

The globalization of economic activities has spurred great demand for resourceful global engineers equipped with management and communication skills and creativity to accompany their advanced technical skills. Training technology-related leaders to exhibit broad vision, a sense of ethics and international sensibilities, a strong orientation toward achieving goals and technically savvy management is an urgent task. This program seeks to produce corporate leaders with outstanding management sensibilities based on profound knowledge of the fundamentals and principles of fields related to engineering and practical skills.

Educational goals

We train students to:

1. Inculcate profound knowledge of the fundamentals and principles of fields related to engineering and practical skills.
2. Cultivate advanced operational skills with knowledge and awareness of related fields (such as technology management, intellectual property and management) so that they acquire broad judgment.
3. Develop the skills to conduct document searches and fieldwork as well as formulate hypotheses and verify them, and the ability as engineers or researchers to analyze technical problems, frame tasks and derive solutions.
4. Build global communication skills and inculcate leadership and other social and interpersonal skills as engineers or researchers.
5. Develop the sense of ethics needed to fulfill their social obligations as engineers or researchers.

JABEE-accredited Program

In March 2014, our Systems Design Program became the first master's degree program in the engineering (combined or new disciplines) and engineering-related fields to receive Japan Accreditation Board for Engineering Education (JABEE) accreditation. JABEE accreditation certifies the quality of the education we provide, and students who complete the program receive exemptions from the national First-Step Professional Engineer Examination and can begin practical training.

Guaranteeing the international equivalence of education quality

JABEE-accredited programs are recognized as the virtual equivalents of training programs for engineers elsewhere in the world. The industry is steadily becoming borderless, and JABEE accreditation is an essential program for us to survive.

Benefits for students who complete the program

Because they are recognized internationally as engineers, students who complete an accredited program are highly rated in various ways, enjoy better employment opportunities and the following benefits:

1. Exempt from the national First-Step Professional Engineer Examination
2. Possessing engineer-in-training qualifications, they can acquire national associate professional engineer status simply by registering
Note: Upon accumulating a minimum of four years of experience, they can become professional engineers if they pass the Second-Step Professional Engineer Examination.

Acquiring associate professional engineer status while working is possible

You can acquire associate professional engineer credentials in half the usual time (two years) by completing the accredited Systems Design Program. We also have many evening classes, and our excellent location—a five-minute walk from Shinjuku Station—also makes study easier for people who work.

Research Fields and Topics, Educational Keywords

Research fields	MOT (Management of Technology)					
	Technological management	Machine	Chemistry	Electric and electronics	Informatics	Architecture
Topics	Cloud casting	New energy and next-generation vehicles	Synthesis of natural products with biological activity	Optimization of feeding system and train operation	Big data analysis	Architectural project management
	Practical study on MOT	Hydrogen system for fuel cell		Evaluation of transport system	Real-world sensing	Development and evaluation of economic performance and environment-friendly construction methodology
	Highly safe automobile control	Precision processing for 3D fine shape				
	Next-generation mobility	Planning and evaluation of comprehensive transport system				
	Acquisition and employment of technology in corporate management	Highly efficient production system				
	Economic policy including business economics and intellectual property policy	Creation of comfort and system design				
	Corporate strategy and business strategy	Mechanical analysis of composite materials				
Educational keywords	System engineering	Ergonomics	Pharmaceutical synthesis	Optimization of transport system	Cloud computing	Building economy
	Entrepreneurship	Sensibility engineering	Chemosynthesis of natural organic materials	Energy saving	Big data	Management
	Business skill	Fuel for fuel cell			Management informatics	
	Smart system	Bioenergy			Internet of things	
	Competition policy	Composite material				
	Economic policy	Microprocessing				
	Innovation	System engineering				
	Facilitation					
	PBL					
	Engineering design					
	Leadership					

Curriculum system

Systems Design Program

	Engineering specialization	Technical management	Project-based learning (PBL)	Communication skills	
Master's program	<p>Mechanical Engineering Fluids Engineering Mechanical Vibrations Precision Machining Machine Element Design Rotor Dynamics Systems Engineering Sports Fluid Dynamics Tire Mechanics Simulation of Mechanical Materials Exergy Engineering</p> <p>Chemistry Bioinformation Chemistry Material Science of Solids Environmental Management Engineering Synthetic Organic Chemistry</p> <p>Electrical Engineering and Electronics Electric Power Systems Simulation of Transport Systems Operating Systems Media Information Processing</p>	<p>Informatics Computer Structure Digital Signal Processing Network Information Systems Human Interface Database Systems Simulations of Social Information Quality and Security Management</p> <p>Architecture Urban Disaster Management Structural Dynamics Seismology and Disaster Management</p>	Technological Management Financial Accounting Global Technological Management Project and Product Management Risk Assessment Business Creation Strategy Intellectual Property Management Standardization Strategy Entrepreneurship Innovation Economics Business Administration Business Game Brand Development Leadership Global Career Path Development of Professional Engineers Transport Systems Social Systems Social Systems Design Internet Technology Facilitation Automotive Systems Industrial Design Finance	Business Game Internship Basic PBL A Basic PBL B Extended PBL	Intercultural Interaction Postgraduate Integrated Skills in English Presenting Technological Research in English Guided Research in English Advanced English Lecture Series
			Pedagogy		

Enrollment and School Fees

Master's programs Mechanical Engineering, Applied Chemistry and Chemical Engineering, Electrical Engineering and Electronics, Informatics, Architecture		Annual payment (single installment)	Two installments	
			At time of enrollment	Second semester
Enrollment fee		¥250,000* (\$2,212)	¥250,000* (\$2,212)	—
School fees	Tuition, lab fee, facilities maintenance fee	¥1,008,000 (\$8,920)	¥504,000 (\$4,460)	¥504,000 (\$4,460)
Various dues (fees collected by the university on behalf of organizations)	Supporters association admission fee	¥15,000* (\$133)	¥15,000* (\$133)	—
	Supporters association dues	¥13,000 (\$115)	¥13,000 (\$115)	—
	Personal accident insurance for students pursuing education and research premium	¥2,430 (\$22)	¥2,430 (\$22)	—
	Total	¥1,288,430 (\$11,402)	¥784,430 (\$6,942)	¥504,000 (\$4,460)

Master's program Systems Design Program		Annual payment (single installment)	Two installments	
			At time of enrollment	Second semester
Enrollment fee		¥250,000* (\$2,212)	¥250,000* (\$2,212)	—
School fees	Tuition, lab fee, facilities maintenance fee	¥1,068,000 (\$9,451)	¥534,000 (\$4,726)	¥534,000 (\$4,726)
Various dues (fees collected by the university on behalf of organizations)	Supporters association admission fee	¥15,000* (\$133)	¥15,000* (\$133)	—
	Supporters association dues	¥13,000 (\$115)	¥13,000 (\$115)	—
	Personal accident insurance for students pursuing education and research premium	¥2,430 (\$22)	¥2,430 (\$22)	—
	Total	¥1,348,430 (\$11,933)	¥814,430 (\$7,207)	¥534,000 (\$4,726)

Doctoral programs Mechanical Engineering, Applied Chemistry and Chemical Engineering, Electrical Engineering and Electronics, Informatics, Architecture		Annual payment (single installment)	Two installments	
			At time of enrollment	Second semester
Enrollment fee		¥250,000* (\$2,212)	¥250,000* (\$2,212)	—
School fees	Tuition, lab fee, facilities maintenance fee	¥958,000 (\$8,478)	¥479,000 (\$4,239)	¥479,000 (\$4,239)
Various dues (fees collected by the university on behalf of organizations)	Supporters association admission fee	¥15,000* (\$133)	¥15,000* (\$133)	—
	Supporters association dues	¥13,000 (\$115)	¥13,000 (\$115)	—
	Personal accident insurance for students pursuing education and research premium	¥3,620 (\$32)	¥3,620 (\$32)	—
	Total	¥1,239,620 (\$10,970)	¥760,620 (\$6,731)	¥479,000 (\$4,239)

(The amounts in the parentheses are for reference purposes only. The exchange rate used is \$1 = ¥113.)

Notes

1. Tuition and lab and facilities maintenance fees can be paid in two separate installments.
2. Alumni and class association dues (¥20,000 and ¥10,000, respectively) are due when paying the first school fees for the final year.
3. The parents or guarantors of international students receive full exemptions from supporters association admission fees and dues.
4. Items marked with an asterisk (*) are only paid during the first year.
5. The master's program enrollment fee is ¥50,000 for Kogakuin University graduates.
6. Recommended candidates from within Kogakuin University receive full exemptions from master's program enrollment fees.
7. Students who have completed a Kogakuin University graduate school program receive full exemptions from doctoral program enrollment fees.
8. Students who have graduated from or completed master's programs at Kogakuin University receive full exemptions from supporters association admission fees.

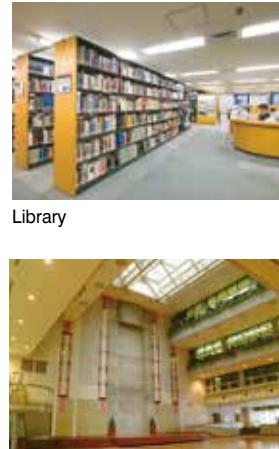
Campuses

Shinjuku Campus

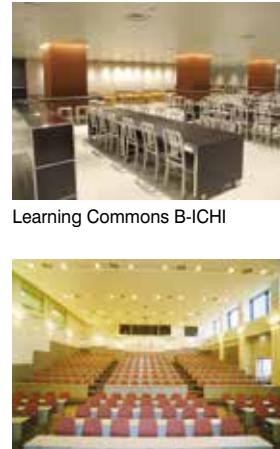
The Shinjuku Campus is conveniently located in the city center just a five-minute walk along the underground walkway from Shinjuku Station. The campus consists of a 29-story high-rise building located in the Shinjuku Skyscraper District. All juniors and seniors from every faculty/school and department study at the Shinjuku campus.



Exterior view



Library



Learning Commons B-ICHI



Atrium



Urban Tech Hall

Hachioji Campus

The Hachioji Campus is a lush green campus that covers an area of about 230,000 m². It features large-scale laboratory facilities and research facilities. All first-year and second-year undergraduate students study at the Hachioji Campus.



Student Center



Dream Building Workshop



Kogakuin 125th Memorial Education Center



Large Classroom



Sports Field

Directions

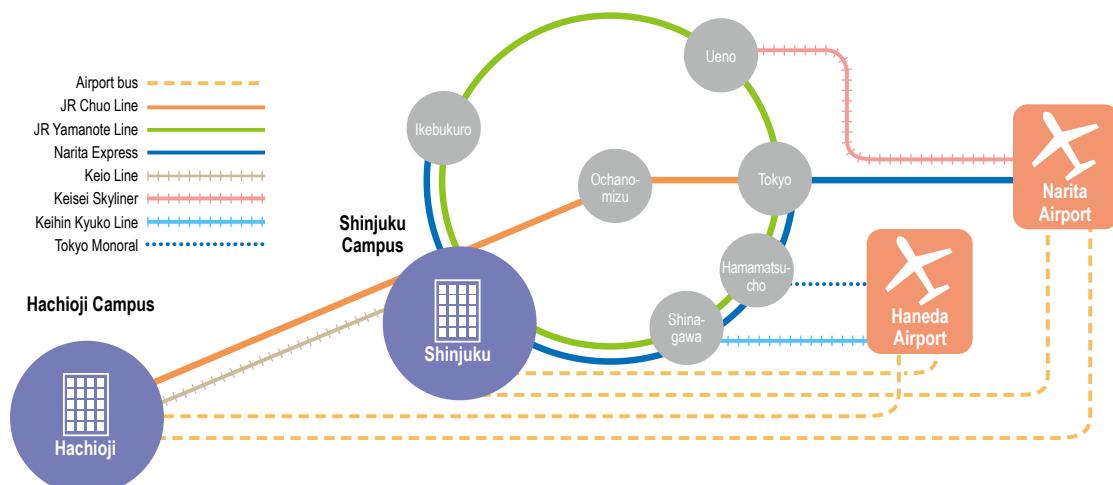
Shinjuku Campus

1-24-2 Nishi-Shinjuku, Shinjuku-ku, Tokyo 163-8677
Tel: 03-3342-1211 (main switchboard)

Hachioji Campus

2665-1 Nakano-machi, Hachioji-shi, Tokyo 192-0015
Tel: 042-622-9291 (main switchboard)

Transportation from Narita and Haneda Airports





KOGAKUIN
UNIVERSITY

K U T E - T O K Y O
Kogakuin University of
Technology & Engineering

Inquiries regarding entrance examinations:
Admissions Center
Shinjuku Campus 11F
nyushi@kogakuin.ac.jp