
Kogakuin University Graduate School

GUIDEBOOK DIGEST

GRADUATE SCHOOL OF ENGINEERING

Mechanical Engineering Program

Applied Chemistry and Chemical Engineering Program

Electrical Engineering and Electronics Program

Informatics Program

Architecture Program

Systems Design Program



KOGAKUIN
UNIVERSITY

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

Philosophy and Goals

Educational and Research Goals

The ultimate goal of Kogakuin University's Graduate School of Engineering is to contribute to human society by conducting creative, high-level research. It also aims to foster engineers and researchers who possess deep knowledge and applicable skills pertaining to the principles and rules in their fields and base their decisions on interdisciplinary perspectives. With that in mind, the master's programs provide the courses to train engineers and researchers in the specialized branch of knowledge. 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.

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 theories and applications in the engineering fields, based on the foundations of undergraduate education. In 1977, the graduate school's regulations 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 faculty/school of advanced engineering, engineering, architecture, and informatics—and we have assembled a diverse faculty team that covers various specialized fields in broad disciplines.



Characteristics of the Graduate School

Diverse Faculty and Meticulous Guidance

Our diverse faculty use their rich experience to provide an advanced and comprehensive education in every major and class subject. The university also has the sophisticated measurement equipment and instruments required for cutting-edge research, creating an extraordinary research environment where students and faculty members perform research activities together every day. Our multiple faculty advisor system also provides meticulous guidance in terms of both studies and research.

Reasonable Tuition and the TA Program

Kogakuin University Graduate School's tuition is set lower than that of other graduate schools to provide educational opportunities to a wider range of people with a passion for learning. We also have a TA (teaching assistant) program in which graduate students support the teaching staff in undergraduate classes, allowing grad students to experience a teaching environment and receive an allowance that reduces their financial burden.

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.





Mechanical Engineering Program

Master's

Doctoral

Educational and Research Goals

This major's educational and research objective is to foster engineers and researchers with a broad perspective who can work independently and internationally. They accomplish this through acquiring more advanced and integrated knowledge and skills after first gaining sufficient knowledge in the basic fields of mechanical engineering, including energy engineering, materials and processing engineering, design engineering, measurement control and robotics, and systems engineering.

Topics

Energy engineering	Materials and process engineering	Design engineering	Measurement control and robotics	Systems engineering
<ul style="list-style-type: none"> ● Aerodynamic characteristics of soccer balls ● Plant-based fuels and abnormal combustion in heat engines ● Study on flow instabilities in axial-flow ● Study on amount of heat transfer through boiling and condensation ● Biomass fuel processing through thermal decomposition reaction ● Hydrogen fuel system for fuel cell ● Development of contactless fluid control technology ● Study on next-generation aircraft and Mars exploration aircraft 	<ul style="list-style-type: none"> ● Development of tribomaterial with CFRP ● Manufacturing and shaping of metal foam ● Precision forging and rolling processing of parts of complex shapes ● Precision processing of 3D fine shapes ● Study on highly efficient method of functional materials 	<ul style="list-style-type: none"> ● Analysis of impact on human heads ● Development of highly reliable joint of different materials ● High performance design for medical implant devices, etc. ● Reduction of mechanical vibration and noise ● Prediction of sound absorption rate and design of sound absorbing materials ● Evaluation on impact and dynamic behavior on sports equipment ● Speakers that deliver sound only in close proximity 	<ul style="list-style-type: none"> ● Growing humanoid robots ● Robust adaptive control theory ● Enrich your life with smart devices ● Control of artificial heart rate ● Development of communication system of rescue robots 	<ul style="list-style-type: none"> ● Study on insect model micro-robots ● Electronic stability control in cornering ● Effect of dynamic stimulation on differentiation of myocytes ● Study on microscopic work support systems ● Markerless motion capture method ● Planning and evaluation of integrated transport systems ● Microfluidic cell culture technology ● Development of interfaces for self-driving automobiles

Applied Chemistry and Chemical Engineering Program

Master's

Doctoral

Educational and Research Goals

This major's educational and research objective is to foster engineers and researchers who can take on challenges that go beyond the conventional fields of specialization to provide chemistry-based solutions to pivotal issues that enrich human life. That includes areas such as advanced material conversion technology, advancement of biotechnology necessary for the fields of life science, medicine, and food, development of environment-friendly materials, resource- and energy-saving technology, and creation of environmental systems for coexistence with natural ecosystems.

Topics

Life sciences	Organic chemistry	Inorganic chemistry and metals	Environment and systems
<ul style="list-style-type: none"> ● Culture of HUVEC cells on type IV collagen aggregates while maintaining their differentiated state ● Cell culture using collagen fibrils from sea cucumber ● Production of useful materials and biofuel by aerial microalgae through photosynthetic CO₂ fixation ● Development of environmental remediation systems by microorganisms ● Biomedical importance of mammalian chitinases ● Structure-function relationship for hydrolytic enzymes ● Chemical analysis and characterization on flavor of foods ● Molecular analysis of the regulation of nitrogen metabolism in plant 	<ul style="list-style-type: none"> ● Synthesis of polycyclic natural products based on the new tandem-cyclization that we originally developed ● Synthesis of macrolide antibiotics based on acyclic stereocontrol methods ● Medicinal chemistry programs focused on kynurenine pathway, signal transduction, DNA repair system ● Identification of novel drug targets based on chemical biology ● Higher order structure changes of rubber materials under the high pressure hydrogen gas exposure ● High thermal conductivity polymers, liquid crystal polymers ● Development of repeatable adhesion system by using polymer brush thin films ● Antifouling surface developed by amino acid-based polyzwitterionic brushes 	<ul style="list-style-type: none"> ● Structure and properties of glass/ceramics ● Development of superionic conducting glass-ceramics ● Anodization of valve metals and functionalization of anodic oxide films ● Nano/micro fabrication of semiconductors based on wet process ● Fabrication of photovoltaic and conductive thin films ● Fabrication of thin-film lithium-ion-battery ● Catalytic performance of supported metal catalyst ● Characterization of supported metal by means of X-ray absorption fine structure ● Manipulation using nanopipettes ● Manipulated single molecules on surfaces with scanning probe microscope 	<ul style="list-style-type: none"> ● Development of water treatment systems with membranes ● Development of membrane bio reactor ● Abatement of VOCs and ultrafine particles in surroundings using ultrasonic atomization ● Development of air filter with high performance long-lasting filter material ● Electrochemical studies on ozone water production system and development of gas-liquid mixing system ● Modeling and development of Li-air battery materials ● Modeling and development of Li-air battery materials ● Silica membranes for gas separation and membrane reactors for hydrogen production ● A simple bioassay using fluorescent materials and <i>Daphnia magna</i> ● Research of material for high performance storage batteries with high capacity and superior safety

Electrical Engineering and Electronics Program

Master's

Doctoral

Educational and Research Goals

This major's educational and research objective is to foster engineers and researchers that emphasize research using their ability to think for themselves and discover and solve problems. It also focuses on enhancing their knowledge of advanced, specialized fields that society requires, such as fundamental and elemental technologies related to electric energy systems, ecology, and IT.

Topics

Energy conversion	Measurement and control	Information and communication	Electronic devices
<ul style="list-style-type: none">● Traffic system control● Electric rail systems and operation control● New motor, non-contact support● New solar cell● Electric power systems for decarbonization	<ul style="list-style-type: none">● Superconductor evaluation and non-contact measurement● Robot development● Nano-level measurement● Bio and vital information● Visible light communication and optical transmission	<ul style="list-style-type: none">● Optical and wireless network● Network computing● Communication software● AI picture recognition● Information search on the Internet● Coding and error control	<ul style="list-style-type: none">● Various displays● Semiconductor materials● Organic materials● Light source for communication● Environmental cleaning materials● Magnetism applications● Functional thin films, thin film device applications



Informatics Program

Master's

Doctoral

Educational and Research Goals

This major's educational and research objective is to foster engineers and researchers that can cover a wide range of fields from hardware to software based on five pillars—fundamentals, engineering, social sciences, fusion/interdisciplinary areas, and unexplored fields—rather than treating information merely as an element of engineering.

Topics

Basic studies	Engineering	Social science	Interdisciplinary fields	Unexplored fields
<ul style="list-style-type: none"> ● Numerical computing ● Parallel processing ● Numerical analysis ● Control system design ● Mathematical programming ● Algorithms ● Software engineering ● Requirements engineering 	<ul style="list-style-type: none"> ● Acoustic processing ● Music information processing ● Security ● Image processing ● Media processing ● Mathematical analysis ● Sensor data analysis ● Learning theory 	<ul style="list-style-type: none"> ● Management informatics ● Corporate information system ● Marketing ● Cyber security ● Physical security ● Safety system ● Information security education 	<ul style="list-style-type: none"> ● Human interface ● Natural language processing ● Multimodal processing ● Database ● Information contents design ● Sensibility interface ● Human interaction ● Interactive media 	<ul style="list-style-type: none"> ● Intellectual information processing ● Biological information processing ● Signal processing ● Visual information processing ● Psychophysics ● Information visualization ● Data mining ● Bayesian statistics



Architecture Program

Master's

Doctoral

Educational and Research Goals

This major's educational and research objective is to foster architects, engineers and researchers with international and practical skills that also possess the broad perspective and advanced, specialized knowledge and skills in architecture necessary to solve problems and issues related to the declining birthrate, aging society, information society, internationalization, and ethical concerns of architectural engineers.

Topics

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
<ul style="list-style-type: none"> ● Study on planning and design ● The possibility of new types of residences for contemporary families ● Natural system-oriented design and planning ● Spatial studies ● Study of sustainable architectural space ● Study and design related to Japanese living spaces ● Study on the lineage of interior design 	<ul style="list-style-type: none"> ● Planning and realization of future visions for cities and towns ● Study on urban structure and land-use projects ● Study on methods of urban design management ● Landscape design for urban beauty ● Landscape design for post-disaster restoration ● Comprehensive urban disaster prevention strategies fit for the flow of the times 	<ul style="list-style-type: none"> ● Study on the planning of educational facilities and environments ● Study on the construction of sustainable living environments in communities ● Study on architectural furniture ● Study on the safety of medical and welfare facilities ● Environment-behavior studies 	<ul style="list-style-type: none"> ● Study on technologies and policies to preserve historical buildings ● Study on the urban fortifications in Belgium and France ● Study on the theories and methods of preservation and reconstruction design ● Research on architecture and urban history 	<ul style="list-style-type: none"> ● Earthquakes and ground vibration simulation ● Earthquake-resistance design methods for wooden residences ● Inspection of the safety of structures ● Strength analysis (buckling) and design of a dome structure 	<ul style="list-style-type: none"> ● Application of BIM for construction activities ● Architectural project management ● Quality evaluation of building materials ● Recycling of building materials 	<ul style="list-style-type: none"> ● R&D of new air-conditioning systems ● Study on countermeasures for microorganism infection in air-conditioning systems ● Study on the change in the value of property due to the move towards energy-saving facilities ● Heat analysis of building envelopes and application in façade design ● Study on environment- and disaster prevention-conscious urban infrastructure ● Study on methods to lower the environmental loads of cities and communities



Systems Design Program

Master's

JABEE accreditation

Educational and Research Goals

This major's educational and research objective is to foster technical leaders, engineers and other practitioners that can meet society's demand for global engineers. They develop the internationally recognized communication skills, broad perspective and sense of ethics, strong sense of goal achievement and management sense based on a deep knowledge of the principles and applications of engineering-related fields.

About JABEE Accreditation

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.

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.

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.

Benefits for students who complete the program

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.

Topics

MOT (Management of Technology)					
Technological management	Machine	Chemistry	Electric and electronics	Informatics	Architecture
<ul style="list-style-type: none"> ● Cloud casting ● Practical study on MOT ● Highly safe automobile control ● Next-generation mobility ● Acquisition and employment of technology in corporate management ● Economic policy including business economics and intellectual property policy ● Property policy ● Corporate strategy and business strategy 	<ul style="list-style-type: none"> ● New energy and next-generation vehicles ● Hydrogen system for fuel cell ● Precision processing for 3D fine shape ● Planning and evaluation of comprehensive transport system ● Highly efficient production system ● Creation of comfort and system design ● Effect of mechanical stimulation on myocyte differentiation ● Musculoskeletal simulator ● Cellular measurement 	<ul style="list-style-type: none"> ● Synthesis of natural products with biological activity 	<ul style="list-style-type: none"> ● Optimization of feeding system and train operation ● Evaluation of transport system 	<ul style="list-style-type: none"> ● Big data analysis ● Real-world sensing 	<ul style="list-style-type: none"> ● Architectural project management ● Development and evaluation of economic performance and environment-friendly construction methodology

Research Support Programs

Doctoral Program Research Grants Reduction

Exceptional students in doctoral programs are selected from each major and exempted from paying half of their tuition. Fees for other expenses may also be reduced depending on conditions. The grant period is for the two years of the doctoral program.

Doctoral Program Research Paper Submission Assistance

With the aim of increasing the international dissemination of our doctoral students' research results, we subsidize a portion of the submission and publication fees.

Exceptional Research Paper Award Program

This program is designed to recognize graduate student research papers published in peer-reviewed academic journals that have been judged to possess particularly high academic merit. Recipients receive a certificate of commendation at the graduation ceremony and 50,000 yen as a supplementary prize.

International Conference Attendance Subsidy for Graduate Students

When graduate students present their research papers at international academic conferences, we subsidize their transportation expenses (economy class round-trip airfare) according to their TOEIC® scores. We also subsidize their transportation, registration and accommodation expenses for domestic presentations.

Enrollment and School Fees

Master's programs

Type	School fees		Various dues			Total
	Enrollment fee	Tuition, lab fee, facilities maintenance fee	Supporters association dues		Personal accident insurance for students pursuing education and research premium	
			Admission fee	Association fee		
First year	¥250,000* (\$2,212)	¥1,050,000 (\$9,292)	¥15,000* (\$133)	¥13,000 (\$115)	¥2,430 (\$22)	¥1,330,430 (\$11,774)

Doctoral programs

Type	School fees		Various dues			Total
	Enrollment fee	Tuition, lab fee, facilities maintenance fee	Supporters association dues		Personal accident insurance for students pursuing education and research premium	
			Admission fee	Association fee		
First year	¥250,000* (\$2,212)	¥958,000 (\$8,478)	¥15,000* (\$133)	¥13,000 (\$115)	¥3,620 (\$32)	¥1,239,620 (\$10,970)

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

Notes

- Tuition and lab and facilities maintenance fees can be paid in two separate installments.
- Alumni and class association fess (¥20,000 and ¥10,000, respectively) are due when paying the first school fees for the final year. Alumni association fees and reunion fess for alumnae of our university and graduate school will be determined separately.
- The parents or guarantors of international students receive full exemptions from supporters association admission fees and dues.
- Items marked with an asterisk (*) are only paid during the first year.

[Master's program]

- The master's program enrollment fee is ¥50,000 for Kogakuin University graduates.
- Recommended candidates from within Kogakuin University receive full exemptions from master's program enrollment fees.
- Students who have graduated from Kogakuin University receive full exemptions from supporters association admission fees.

[Doctoral program]

- Students who have completed a Kogakuin University graduate school program receive full exemptions from doctoral program enrollment fees.
- Students who have completed master's programs at Kogakuin University receive full exemptions from supporters association admission fees.

Campuses

Shinjuku Campus

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



Exterior view

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.



Library



Learning Commons B-1CHI



Atrium

Hachioji Campus

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



Kogakuin 125th Memorial Education Center and Student Center

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.



Large Classroom



Dream Building Workshop



Japanese Archery Range



Sports Field

Directions

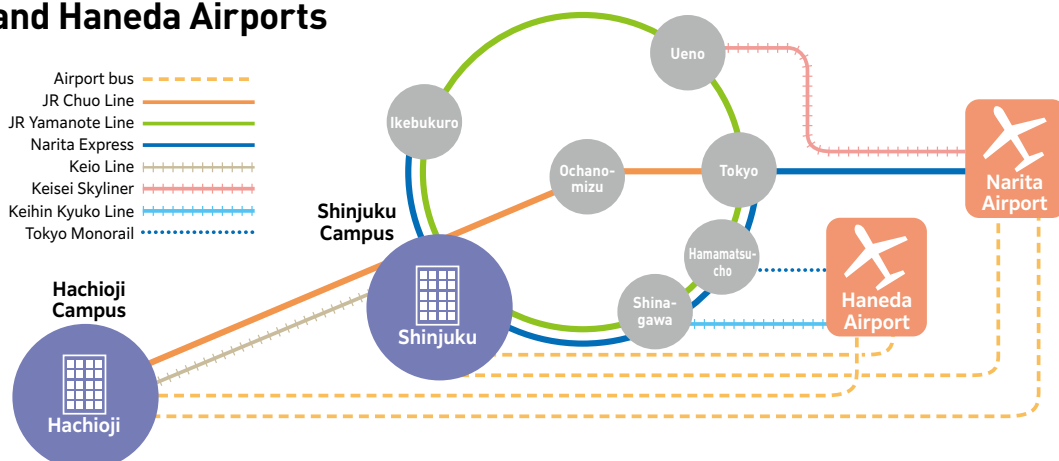
Shinjuku Campus

- A 5-min. walk from the west exit of JR Shinjuku Station (Yamanote, Chuo, Sobu, Saikyo, Shonan-Shinjuku lines)
- A 5-min. walk from Shinjuku Station (Keio, Odakyu, Marunouchi, Toei Shinjuku, Toei Oedo lines)

Hachioji Campus

- From JR Hachioji Station (Chuo, Yokohama, Hachiko lines): Take the Nishi Tokyo Bus (direct) from North Exit Bus Stop 15 and get off Kogakuin-mae bus stop (15 min.)
- Take the Nishi Tokyo Bus from North Exit Bus Stop 6 and get off at Kogakuin Daigaku bus stop or Kogakuin Daigaku-nishi bus stop (20 min.)

Transportation from Narita and Haneda Airports



For More Information About the Graduate School

Information on laboratories, curriculum, entrance examinations and other aspects for each major

<https://www.kogakuin.ac.jp/>



Inquiries

Admissions Center, Shinjuku Campus 11F

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<https://www.kogakuin.ac.jp/>