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

KOGAKUIN UNIVERSITY | KUTE-TOKYO 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 five 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 develop student's fundamental skill, and to improve their ability to become mechanical engineers and researchers with a broad perspective. Through our course program, students learn and acquire more advanced and integrated knowledge and skills in the basic fields of mechanical engineering, such as 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
● Optimal aerodynamic design of sports equipment and skills ● Carbon-free fuels and abnormal combustion in heat engines ● Study on flow instabilities in axial-flow ● Biomass fuel processing through thermal decomposition reaction ● Development of fuel cells that run on biofuels ● Development of contactless fluid control technology ● Study on next-generation aircraft and Mars exploration aircraft	● 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 ● Development of new functional materials with self-healing functions, etc. ● Development of induction heating bending technology	● 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	● 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 ● Development of lunar exploration robots ● Development of civil engineering construction robots	● Study on insect model micro-robots ● Electronic stability control in cornering ● Study on microscopic work support systems ● Markerless motion capture method ● Microfluidic cell culture technology ● Development of interfaces for self-driving automobiles ● Posture estimation through sensor fusion

Applied Chemistry and Chemical Engineering Program

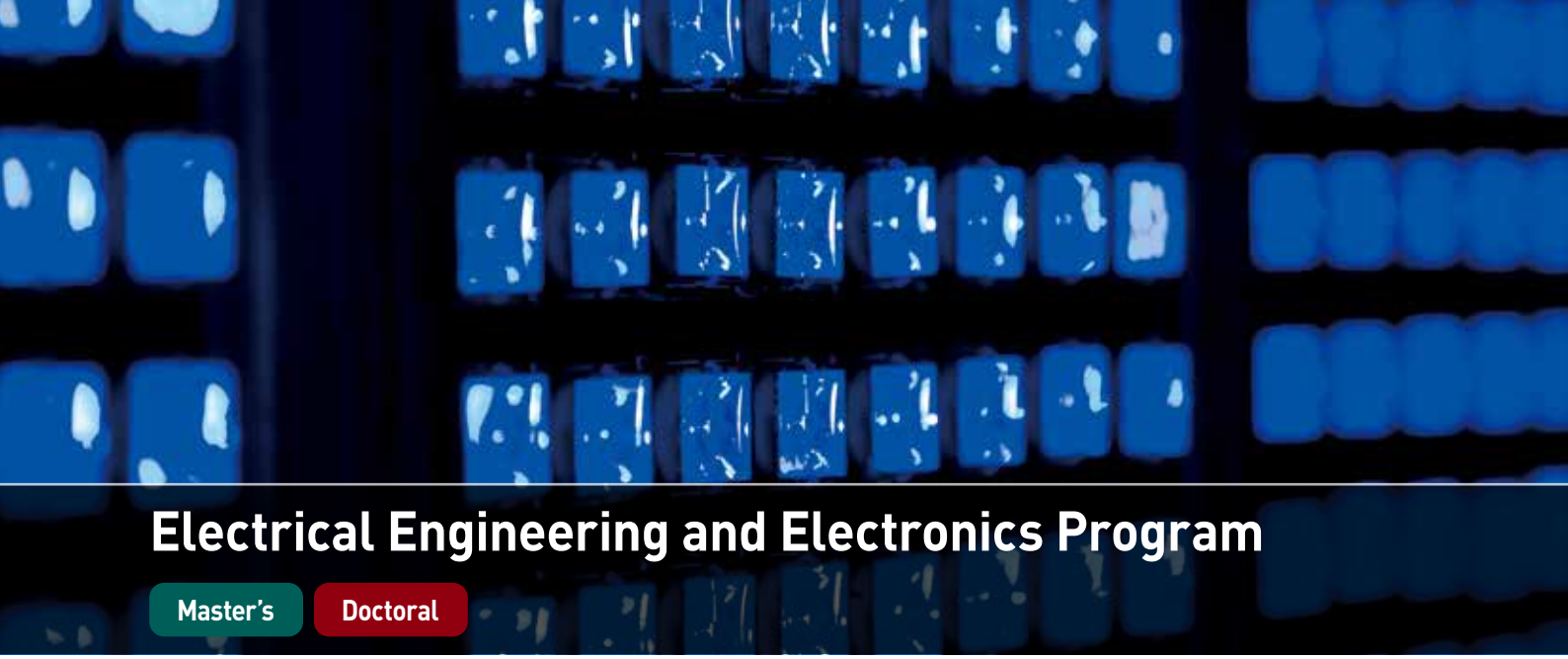
Master's Doctoral

Educational and Research Goals

The department aims to foster engineers and researchers who can provide chemistry-based solutions to important issues that enrich human life beyond conventional specialized fields. Students will conduct research in a wide variety of fields: advanced biotechnology required for the life science, medical and medicinal chemistry, and food chemistry; development of advanced materials and environmentally friendly materials; resource- and energy-saving technologies; and construction of environmental systems that coexist in harmony with natural ecosystems.

Topics

Life sciences	Organic chemistry	Inorganic chemistry and metals	Environment and systems
● Fiber structure analysis of fascia ● Cell culture using collagen fibrils from sea cucumber ● Biomedical importance of mammalian chitinases ● Structure-function relationship for hydrolytic enzymes ● Production of useful materials and biofuel by aerial microalgae through photosynthetic CO_2 fixation ● Development of environmental remediation systems by microorganisms ● Exploratory research for new useful bioactive compounds derived from marine organisms and insects ● Elucidation research of the functions of new bioactive compounds based on chemical biology research	● Synthesis of polycyclic natural products based on the new tandem-cyclization that we originally developed ● Synthesis of macrolide antibiotics based on acyclic stereocontrol methods ● Development of new reactions from α-diazo esters ● Synthesis of helicenes ● Creation of new physiologically active compounds ● 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 ● Qualitative assessment of foods based on comprehensive compositional analysis ● Biosynthesis and development of food-derived functional ingredients	● Structure and properties of glass/ceramics ● Development of superionic conducting crystallized glass for all-solid-state sodium-ion battery ● Development of biomaterial for a super-aging society ● Creation of eco-materials ● Anodization of valve metals and functionalization of anodic oxide films ● Nano/micro fabrication of semiconductors based on wet process ● Development of local probes using nanopipettes ● Dissolution of gold in alkali halide solution	● Development of wastewater treatment systems with membranes ● Development of membrane bio reactor ● Silica membranes for gas separation and membrane reactors for hydrogen production ● Development of air filter with high performance long-lasting filter material ● Abatement of VOCs and ultrafine particles in surroundings using ultrasonic atomization ● Modeling and development of polymer electrolytes for fuel cells ● Modeling and development of Li-air battery materials ● Research of material for high performance storage batteries with high capacity and superior safety ● Catalytic action of supported metal catalysts ● Analysis of solid catalysts through X-ray absorption spectroscopy ● Development of a phosphorus recycling system through recovering phosphorus from sludge ash and producing phosphorus-based fertilizers ● Development of marine fertilizers, application of fertilizer for the growth of seaweed, and prevent desertification of the sea



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
● Traffic system control ● Electric railway systems and operation control ● New motor, non-contact support ● New solar cell ● Electric power systems for decarbonization	● Superconductor evaluation and non-contact measurement ● Robot development ● Nano-level measurement ● Surface analysis ● Biomedical information ● Visible light communication and optical transmission	● Optical and wireless network ● Network computing ● Communication software ● AI picture recognition ● Information search on the Internet ● Information media ● Coding and error control	● Various displays ● Semiconductor materials ● Organic materials ● Crystal growth ● Photonics ● Light source for communication ● Environmental cleaning materials ● Magnetic applications ● Functional thin films, thin film device applications ● Advanced functional device

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, interdisciplinary fields, and unexplored fields–rather than treating information merely as an element of engineering.

Topics

Fundamentals	Engineering	Social sciences	Interdisciplinary fields	Unexplored fields
● Mathematics, Mathematical Sciences, Analysis ● Software engineering and requirements engineering ● Software automatic tuning ● Numerical simulation, parallel processing	● Integration of information from multiple sensors ● Acoustic processing and applied acoustic ● Biometric measurement and data analysis ● Image restoration technology and applications ● Progress support through sensing and feedback ● Video processing and encoding, realistic video expression ● Human communication, image processing, intention/behavior understanding ● Acoustic metamaterials design, shape preservation and restoration of ancient musical instruments, passive diagnostics of buildings, analysis of reverberation transfer functions ● Predictive modeling and decision making under uncertainty ● Algorithm theory, cryptography, game theory	● Cyberattack detection and protection through AI technology ● Authentication and identification ● Real world data analysis ● Problem solving in the social science field through simulation ● Microeconomic and statistical analysis of human behavior, corporate behavior, and political measures	● Analysis of multimedia data ● Communication research including human audiovisual, speech and language processing ● Kansei engineering, content design, application development ● Image recognition, interactive robots, HRI, HCI ● Information retrieval, recommender systems, user interaction	● Distributed systems ● Facial recognition, facial generation, facial database, VR ● Support for the disabled, metaverse applications ● Visual engineering, individual differences in color vision, spatial perception, gaze behavior ● Data mining and visualization, 3D animation display

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
● 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	● 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 sustainability ● Landscape design for urban environment and public space ● Landscape design for post-disaster restoration ● Comprehensive urban disaster prevention strategies fit for the flow of the times	● 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	● 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	● Earthquakes and ground vibration simulation ● Earthquake-resistance design methods for wooden residences ● Inspection of the safety of structures ● Strength analysis (buckling) and design of domed structures	● Application of BIM for construction activities ● Architectural project management ● Quality evaluation of building materials ● Recycling of building materials	● 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 infrastructures ● Study on methods to lower the environmental loads of cities and communities

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
1. Tuition and lab and facilities maintenance fees can be paid in two separate installments.
2. 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.
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.

[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-ICHI

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 m^2. 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

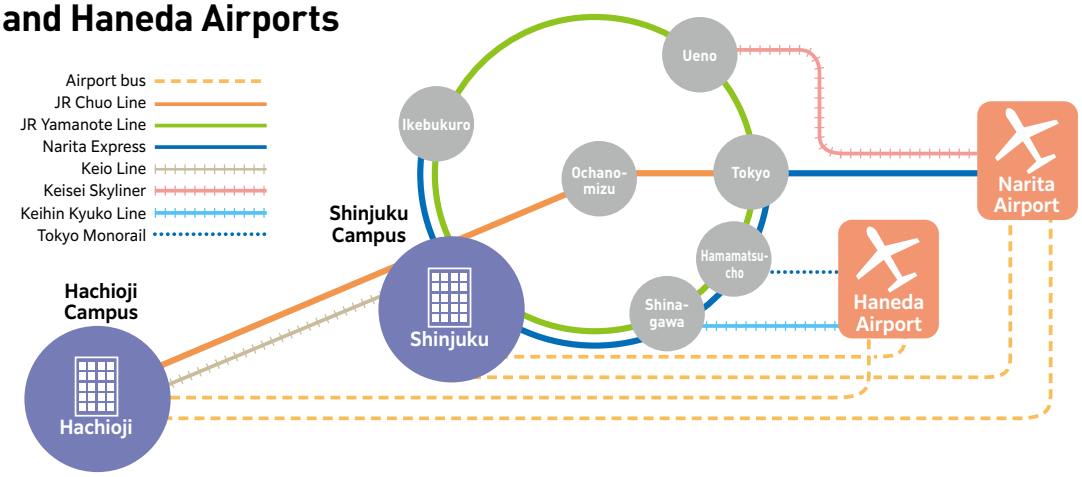
Shinjuku Campus

- 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
Tel : 03-3340-0130 ／ E-mail : nyushi@kogakuin.ac.jp
https://www.kogakuin.ac.jp/