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
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.

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 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, based on TOEIC® scores, 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**

- The University of Oulu (UC)
- Politecnico di Milano (Polimi)
- Università Iuav di Venezia (IUAV)
- University of Limerick (UL)
- University of Kent (Ku)
- ESIEE Paris
- Instituto Superior Técnico (Ist)
- Soochow University (SUDA)
- Ningbo Institute of Material Technology and Engineering, Chinese Academy Sciences (NIMTE, CAS)
- Thammasat University (TU)
- Chulalongkorn University (CU)
- Thai-Nichi Institute of Technology (Tni)
- Samokand State University
- Samarkand State University
- Walailak University (WU)
- University of Rwanda (Ur)
- The University of Namibia (UNAM)
- The Faculty of Engineering, Mahidol University
- The University of Da Nang (UD)
- Danang University of Science and Technology (DUT)
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 a set payment of ¥5,000 per class unit (equal to 105 minutes) for this work. There is a limit placed on how many hours they can work 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 fifty 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 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:
The holders of master degree who fulfill the prescribed requirements can acquire specialized junior and senior high school teaching certificates. The specialized teaching certificates this graduate school offers are listed below. A type 1 license is a prerequisite for acquiring a specialized teaching certificate, but that can be acquired by auditing undergraduate courses if the student in this program does not have one.

- Specialized junior high school teaching certificate (technology)
- Specialized senior high school teaching certificate (technology)
- Curator’s credentials

The undergraduate department offers curator’s credentials courses, but graduate students can obtain these credentials by auditing undergraduate courses.
### Research Fields and Topics, Educational Keywords

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<th>Research fields</th>
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<th>Materials and process engineering</th>
<th>Design engineering</th>
<th>Measurement control and robotics</th>
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### Curriculum

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<td>Lecture courses</td>
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### Seminars and practicums

- Advanced mechanical engineering lectures and seminars (A, B, C, D)
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

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<tr>
<th>Research fields</th>
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<th>Organic chemistry</th>
<th>Inorganic chemistry and metals</th>
<th>Environment and systems</th>
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<td>Synthesis of polycyclic natural products based on the new tandem-cyclization that we originally developed</td>
<td>Structure and properties of glass/ceramics</td>
<td>Development of water treatment systems with membranes</td>
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<td>Cell culture using collagen fibrils from sea cucumber</td>
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<td>Biomedical importance of mammalian chitinases</td>
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<td>Structure-function relationship for hydrolytic enzymes</td>
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<td>Molecular analysis of the regulation of nitrogen metabolism in plants</td>
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<td>Glass/ceramics science</td>
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### Curriculum

<table>
<thead>
<tr>
<th>Life sciences</th>
<th>Organic chemistry</th>
<th>Inorganic chemistry and metals</th>
<th>Environment and systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biotechnology</td>
<td>Synthetic Organic Chemistry</td>
<td>Crystal Chemistry</td>
<td>Diffusional Separation Processes</td>
</tr>
<tr>
<td>Cell Technology</td>
<td>Organic Polymers</td>
<td>Amorphous Materials Science</td>
<td>Multi-Scale Computational Chemistry</td>
</tr>
</tbody>
</table>

#### Doctoral program

- **Biotechnology**
- **Cell Technology**
- **Biotechnology**
- **Bio-resource Chemistry**
- **Molecular Basis of Biology**
- **Genome Chemistry**
- **Enzyme Technology**

#### Master’s program

- **Cell Technology**
- **Biotechnology**
- **Food Chemical Engineering**
- **Synthetic Organic Chemistry**
- **Organic Polymers**
- **Bioceramic Medicinal Chemistry**
- **Organic Reaction**
- **Crystal Chemistry**
- **Amorphous Materials Science**
- **Nano- and Microstructured Materials Science**
- **Nano Chemistry**
- **Material Science of Solids**
- **Diffusional Separation Processes**
- **Multi-Scale Computational Chemistry**
- **Atmospheric Environment Engineering**
- **Catalyst Chemistry**
- **Environmental Systems Engineering**
- **Environmental Analytical Chemistry**
- **Separation Engineering**
- **Environmental Electrochemistry**
- **Biochemical Engineering**

### Specialized subjects

- **Advanced applied chemistry and chemical engineering lectures and seminars (A, B, C, D)**

### Postgraduates

- **Integrated Skills in English**
- **Presenting Technological Research in English**
- **Guided Research in English**
- **Kogakuin 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)**
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

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

### Educational keywords

| Railroad, automobile, energy-saving | Electronic circuit with sensor, superconductor evaluation, noncontact measurement | 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 | Biological measurement, medical-engineering collaboration | Face, object | LED, semiconductor laser, electroluminescence | |
| Aerospace material, elementary particle reaction | Mass data processing, search engine | Recycle, thin film | | |

### Curriculum

#### Doctoral program

- **Energy conversion**
- **Measurement and control**
- **Information and communication**
- **Electronic devices**

#### Master's program

- **Lecture courses**

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**Seminars and practicums**

- Advanced electrical engineering and electronics lectures and seminars (A, B, C, D)
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

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

### Curriculum

<table>
<thead>
<tr>
<th>Basic studies</th>
<th>Engineering</th>
<th>Social sciences</th>
<th>Interdisciplinary fields</th>
<th>Unexplored fields</th>
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<tbody>
<tr>
<td>Doctoral program</td>
<td>Computational Algorithms</td>
<td>Image Reconstruction</td>
<td></td>
<td>Human Interface</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Image Characteristics</td>
<td></td>
<td>Cognitive Science of Language</td>
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<tr>
<td></td>
<td></td>
<td>Measurement</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Video Information and Processing</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Distributed Algorithms</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Signal Processing for Applied Acoustics</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intelligent Media Processing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Lecture courses

- Computer Architecture
- Parallel Algorithms
- Software Engineering Language Processing
- Signal Representation for Acoustic Events Modeling
- Digital Signal Processing for Acoustic Signals
- Distributed Systems and Networks
- Image Reconstruction
- Image Characteristics Measurement
- Video Information and Processing
- Distributed Algorithms
- Multi-sensor Data Analysis
- Pattern Recognition
- Mathematical Analysis
- Applied Statistics
- Color Information Processing
- Quality and Security Management
- Security Science
- Cyber Security
- Human Interface
- Computational Linguistics
- Database Systems
- Artificial Intelligence
- Information Content Design
- Numerical Simulation
- Information and Visualization
- Intelligent Information Processing
- Human Visual System
- Human Sensory Perception
- Object-oriented Programming Algorithms for Number Theory
- Advanced Topics in Informatics

### Postgraduate Integrated Skills in English
- Presenting Technological Research in English
- Guided Research in English
- Kogakuin English Lecture Series
- Internship
- Pedagogy

### Seminars and Practicums
- Advanced informatics lectures and seminars (A, B, C, D)
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 cooperation 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

<table>
<thead>
<tr>
<th>Research fields</th>
<th>Design planning</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study on planning and design</td>
<td>Planning and realization of future visions for cities and towns</td>
<td>Study on the planning of educational facilities and environments</td>
</tr>
<tr>
<td>The possibility of new types of residences for contemporary families</td>
<td>Study on urban structure and land-use projects</td>
<td>Study on the construction of sustainable living environments in communities</td>
</tr>
<tr>
<td>Natural system-oriented design and planning</td>
<td>Study on methods of urban design management</td>
<td>Study on architectural furniture</td>
</tr>
<tr>
<td>Spatial studies</td>
<td>Landscape design for urban beauty</td>
<td>Study on the safety of medical and welfare facilities</td>
</tr>
<tr>
<td>Study of sustainable architectural space</td>
<td>Landscape design for post-disaster restoration</td>
<td>Environment-behavior studies</td>
</tr>
<tr>
<td>Study and design related to Japanese living spaces</td>
<td>Comprehensive urban disaster prevention strategies fit for the flow of the times</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Topics</th>
<th>Educational keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural space design, residence and cities</td>
<td>Urban planning systems, restoration and immigration</td>
</tr>
<tr>
<td>Environmental architecture, nature, plastic architecture</td>
<td>Regulation and guidance, city planning design</td>
</tr>
<tr>
<td>Computational design</td>
<td>Urban construction, land-use projects</td>
</tr>
<tr>
<td>Relationship between humans and architecture</td>
<td>Suburban cities, social experiments</td>
</tr>
<tr>
<td>Compact city, sustainable architecture</td>
<td>Landscape design, community resources</td>
</tr>
<tr>
<td>Tradition and the modern age</td>
<td>Updating urban foundations, resorts</td>
</tr>
<tr>
<td>Scale, material and detail</td>
<td>Preservation and restoration of natural and cultural environmental characteristics</td>
</tr>
<tr>
<td>Interior design, branding</td>
<td>Time-space scale, safety and security, ICT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Architecture Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study on planning and design</td>
</tr>
<tr>
<td>Study on urban structure and land-use projects</td>
</tr>
<tr>
<td>Study on urban fortifications in Belgium and France</td>
</tr>
<tr>
<td>Study on the theories and methods of conservation and renovation design</td>
</tr>
<tr>
<td>Inspection of the safety of structures</td>
</tr>
<tr>
<td>Heat analysis of building envelopes and application in facade design</td>
</tr>
</tbody>
</table>

### Curriculum

<table>
<thead>
<tr>
<th>Design and planning</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural Design</td>
<td>Urban Planning Environmental Ecology</td>
</tr>
<tr>
<td>Architectural Process</td>
<td>Urban Design Urban Regeneration and Policies Architectural and Urban Disaster Mitigation</td>
</tr>
<tr>
<td>Architectural Planning</td>
<td>Architectural Space Planning Facility Planning Environment Behavior</td>
</tr>
<tr>
<td>Architectural History in Japan</td>
<td>Wooden Structures Seismology and Disaster Management Structural Design Steel Structures</td>
</tr>
<tr>
<td>Building Construction System</td>
<td>Building Materials Environmental Materials</td>
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<tr>
<td>Architectural Environment and Control</td>
<td>Architectural Air Management Urban Environment</td>
</tr>
<tr>
<td>Architectural Design I</td>
<td>Urban Environmental System Symbiosis System Architectural Environmental Symbiosis System</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lecture courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modern Architectural History Architectural History in Europe Architectural History in Japan</td>
</tr>
<tr>
<td>Building Construction System</td>
</tr>
<tr>
<td>Production Systems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Seminars and Practicums</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced architecture lectures and seminars (A, B, C, D)</td>
</tr>
</tbody>
</table>
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
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 fast tracking below.

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.

Fast tracking 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

<table>
<thead>
<tr>
<th>Research fields</th>
<th>MOT (Management of Technology)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Management</td>
</tr>
<tr>
<td>Cloud casting</td>
<td>New energy and next-generation vehicles</td>
</tr>
<tr>
<td>Practical study on MOT</td>
<td>Hydrogen system for fuel cell</td>
</tr>
<tr>
<td>Highly safe automobile control</td>
<td>Precision processing for 3D fine shape</td>
</tr>
<tr>
<td>Next-generation mobility</td>
<td>Planning and evaluation of comprehensive transport system</td>
</tr>
<tr>
<td>Acquisition and employment of technology in corporate management</td>
<td>Highly efficient production system</td>
</tr>
<tr>
<td>Economic policy including business economics and intellectual property policy</td>
<td>Creation of comfort and system design</td>
</tr>
<tr>
<td>Corporate strategy and business strategy</td>
<td>Mechanical analysis of composite materials</td>
</tr>
</tbody>
</table>

#### Topics

| System engineering | Ergonomics | Pharmaceutical synthesis | Optimization of transport system | Cloud computing | Building economy |
| 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 | Reverse engineering using AI |
| PBL | 

#### Educational keywords

<table>
<thead>
<tr>
<th>Educational keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td>System engineering</td>
</tr>
<tr>
<td>Entrepreneurship</td>
</tr>
<tr>
<td>Business skill</td>
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<td>Smart system</td>
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<td>Competition policy</td>
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<tr>
<td>Innovation</td>
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<tr>
<td>Facilitation</td>
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#### Curriculum

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<tr>
<th>Engineering specialization</th>
<th>Technical management</th>
<th>Project-based learning (PBL)</th>
<th>Communication skills</th>
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<td>Guided Research in English</td>
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<td>Project and Product Management</td>
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<td>Architecture</td>
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Pedagogy
## Enrollment and School Fees

### Master's programs

(Mechanical Engineering, Applied Chemistry and Chemical Engineering, Electrical Engineering and Electronics, Informatics, Architecture, System Design)

<table>
<thead>
<tr>
<th></th>
<th>Annual payment (single installment)</th>
<th>Two installments</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>At time of enrollment</td>
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<tr>
<td>Enrollment fee</td>
<td>¥250,000* ($2,212)</td>
<td>¥250,000* ($2,212)</td>
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<tr>
<td>School fees</td>
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<tr>
<td>Tuition, lab fee, facilities maintenance fee</td>
<td>¥1,050,000 ($9,292)</td>
<td>¥525,000 ($4,646)</td>
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<tr>
<td>Supporters association admission fee</td>
<td>¥15,000* ($133)</td>
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<tr>
<td>Supporters association dues</td>
<td>¥13,000 ($115)</td>
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<tr>
<td>Personal accident insurance for students pursuing education and research premium</td>
<td>¥2,430 ($22)</td>
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<tr>
<td>Total</td>
<td>¥1,330,430 ($11,774)</td>
<td>¥805,430 ($7,128)</td>
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</table>

### Doctoral programs

(Mechanical Engineering, Applied Chemistry and Chemical Engineering, Electrical Engineering and Electronics, Informatics, Architecture)

<table>
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<tr>
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<th>Annual payment (single installment)</th>
<th>Two installments</th>
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<tbody>
<tr>
<td></td>
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<td>At time of enrollment</td>
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<tr>
<td>Enrollment fee</td>
<td>¥250,000* ($2,212)</td>
<td>¥250,000* ($2,212)</td>
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<tr>
<td>School fees</td>
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<tr>
<td>Tuition, lab fee, facilities maintenance fee</td>
<td>¥958,000 ($8,478)</td>
<td>¥479,000 ($4,239)</td>
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<tr>
<td>Supporters association admission fee</td>
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</tr>
<tr>
<td>Supporters association dues</td>
<td>¥13,000 ($115)</td>
<td>–</td>
</tr>
<tr>
<td>Personal accident insurance for students pursuing education and research premium</td>
<td>¥3,620 ($32)</td>
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<tr>
<td>Total</td>
<td>¥1,239,620 ($10,970)</td>
<td>¥760,620 ($6,731)</td>
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</tbody>
</table>

(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.

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.

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