

Department	Department of Architecture
Course	Master, Doctor
Degree	Master(Architecture/Engineering), Doctor(Architecture/Engineering)

1. Diploma Policy	<p>The department of architecture aims to nurture architects, engineers, and researchers with a global perspective who practice "Architectural Design" in the diverse traditions and cultures unique to each region with a rich living environment that coexists with nature, history, and climate, and contribute to the world-class architectural society. "Architectural Design" means a comprehensive design that integrates art and engineering. It covers a wide range of research activities that enable safe and sustainable environments, including design, restoration, preservation, revitalization, and community design(machidukuri), to form a harmonious living environment over time while organically linking the "people," "architecture," "cities," and "nature" in a regional context. Our department offers diverse and advanced education and research guidance through an interdisciplinary approach to achieve this goal. The fields of "architectural art" provide research guidance in architectural history, architectural planning, and urban planning, and the fields of "architectural engineering" provide research guidance in environmental engineering, structural engineering, and building production. In the graduate program, students work on their research thesis under the guidance of an academic advisor. Master of architecture is awarded to candidates in the fields of "architectural arts" who successfully demonstrate the knowledge and abilities to explore architecture from an artistic perspective. Master of engineering is awarded to candidates in the "architectural engineering" field who successfully demonstrate the abilities to apply engineering knowledge. In the doctoral course, students are required to conduct original research under academic supervisors' guidance, publish several academic papers in international journals and conferences, and compile the research results into a dissertation. After a successful dissertation defense, Doctor of Architecture is awarded to a candidate who is recognized his/her broad knowledge of architecture and the skills to realize applications in the real world, and Doctor of Engineering is awarded to a candidate who is recognized his/her extensive knowledge of engineering and abilities to realize applications in the real world.</p> <p>Specifically, the following degrees will be awarded to students who have achieved the academic goals described below.</p> <p>Master of Architecture: Possesses knowledge and ability to explore architecture comprehensively from an artistic perspective. Doctor of Architecture: Possesses a wide range of architectural knowledge and the skills and abilities to realize applications. Master of Engineering: Possesses the skills and abilities to apply fundamental knowledge in engineering. Doctor of Engineering: Possesses a wide range of engineering knowledge and has the skills and ability to realize applications.</p>
2. Curriculum Policy	<p>[Policy for Master of Architecture] In the field of "architectural art," each discipline has its unique objective and research method: architectural history, which investigates the theory of architectural innovation and creation in historical context; architectural planning, which focuses on the design of architecture in the modern age; and urban planning, which focuses on the city as a collection of built forms. In the graduate program, the goal is to cultivate a broad perspective and a high level of insight to integrates all disciplines of architecture rather than simply honing the specialty of the particular research topic. The integrated approach is reflected in the master's thesis and project, which encourages students to learn from the interrelated field of studies.</p> <p>[Policy for Master of Engineering] Each research field of "architectural engineering" has its unique characteristics. The environmental engineering research area covers mechanical equipment systems planning for comfortable and healthy built environments, disaster mitigation and prevention theories and technologies against earthquake, fire, and flood, energy conservation technologies, environmental impact assessment, and methodologies for consensus-building and policy making shifting towards a decarbonized society. In the field of structural engineering, graduate students are expected to acquire a broad range of scientific knowledge covering from the basics of building structures to applications in structural design; including structural materials, seismic systems, elastoplastic mechanics, shell structures, soil-and-foundation engineering, earthquake engineering, response control systems, damping structures, and seismic isolation. Building production involves education and research on the application of new building materials, the development of building construction methods and details for various building typologies, and the development of building production systems and construction management techniques. All of these research topics are directly related to the current construction practice. For graduate students to acquire the knowledge and skills listed above, the department of architecture provides opportunities to participate in lectures in advanced theories and practical exercises/ activities integrated under the direction of an academic supervisor.</p>
Learning Outcome 1	<p>(Common) Study in the "Waseda Architecture" tradition, and develop the ability to fulfill what modern society expects of architecture and the built environment</p>

Learning Outcome 2	(Common) Have both a global perspective and an appreciation for region-specific history and culture, and develop the ability to contribute internationally
Learning Outcome 3	(M.Arch) Have the opportunity be involved in the practice of architecture and urban design and understand the professional skills of architects and their mission in society (M.Eng) Have the opportunity be involved in the practice of architecture, urban design, and engineering to understand the professional skills of architects/engineers and their mission in society
Learning Outcome 4	(M.Arch) Obtain the ability to make creative proposals based on a deep knowledge of design and aesthetics of architecture (M.Eng) Obtain the ability to make creative proposals based on an in-depth knowledge of design, aesthetics, and engineering in the architectural field
Learning Outcome 5	(M.Arch) Develop the ability to absorb proactively advanced knowledge in architecture, urban design, and related fields-of-study (M.Eng) Develop the ability to absorb proactively advanced knowledge in architecture, urban design, structural mechanics, architectural environment, building engineering, and related fields-of-study
Learning Outcome 6	(M.Arch) Develop the ability to identify, investigate, and analyze broad-ranged issues enrooted in human activity and the region, based on the existing base of knowledge in architecture, urban design, and related fields-of-study (M.Eng) Develop the ability to identify, investigate, and analyze broad-ranged issues enrooted in human activity and the region, based on the existing base of knowledge in architecture, urban design, structural mechanics, architectural environment, building engineering, and related fields-of-study
Learning Outcome 7	(M.Arch) Develop the ability to solve problems of architectural design and planning pragmatically through collaborative work with faculty and other students (M.Eng) Develop the ability to solve various architectural engineering problems pragmatically through collaborative work with faculty and other students
Learning Outcome 8	Develop the ability to exert leadership in collaboration with experts of different fields of study and the general public to propagate one's idea broadly to society

Department	Department of Modern Mechanical Engineering
Course	Master, Doctor
Degree	Master(Engineering) , Doctor(Engineering)

1. Diploma Policy	The program integrates basic and specialized knowledge essential for solving various academic and social problems, and provides practical education and research to solve various problems facing modern society from a mechanical engineering perspective. The master's degree is awarded to those who are recognized as having sufficient knowledge and research promotion in the specialized field of mechanical engineering. The doctoral degree is awarded to those who have sufficient knowledge in mechanical engineering and who are recognized to have made sufficient academic contributions.
2. Curriculum Policy	A variety of phenomena are intertwined to create contemporary social problems. We will develop education to foster development engineers with advanced conceptual, practical, and logical composition skills to tackle such problems. Specifically, we aim to accumulate advanced specialized knowledge, cultivate the ability to apply it, and improve presentation skills. As a culmination of these efforts, students will set a problem to be tackled in their master's thesis and doctoral thesis, and use their various specialized knowledge to solve the problem.

Learning Outcome 1	As a master's thesis, it should be completed with an awareness of its academic value. The doctoral thesis should contain at least the specified number of peer-reviewed papers.
Learning Outcome 2	After reading the relevant papers, identify the problems and promote research with academic value. Then, compose a thesis that is free of plagiarism issues.
Learning Outcome 3	Under the guidance of the supervisor, students will acquire the ability to summarize the research they are promoting and present it in an easy-to-understand manner.
Learning Outcome 4	Students will acquire the advanced specialized knowledge necessary to tackle social problems. There are many leading-edge specialized subjects, so students can select subjects and acquire knowledge according to the image of engineers they want to become in the future.
Learning Outcome 5	Through research guidance and seminar courses, students will acquire the knowledge directly necessary to promote research, while formulating a research plan and promoting research independently.
Learning Outcome 6	In order to be able to independently solve various social problems after completion of the program, students will not only acquire the necessary knowledge, but will also acquire the ability to independently promote research through the graduate program.

Department	Department of Industrial and Management Systems Engineering
Course	Master, Doctor
Degree	Master(Engineering), Doctor(Engineering)

1. Diploma Policy	In modern society, our lives highly depend on socio-technical systems. Department of Industrial and Management Systems Engineering deals with technologies related to the design, development, maintenance, and operation of these evolving socio-technical systems and fosters human resources who can contribute to global society. In the master course, the goals are to cultivate the ability to perceive problems from macro, meso, and micro levels and to conceive solutions to them, to acquire design methodologies and technologies for effective utilization of system components (management resources) such as people, materials, equipment, money, and information, and also to conduct research and development for them. In the doctoral course, we aim to further develop these skills and acquire the most advanced knowledge and techniques in their fields, as well as to foster researchers and engineers who can creatively open up the fields and take an active role globally.
2. Curriculum Policy	Students will acquire a correct understanding of socio-technical systems, the subject of management systems engineering, and also acquire knowledge and technologies in various fields related to the design, development, maintenance, and operation of these systems, and furthermore cultivate the ability to research and develop technologies related to management systems engineering. In the master course, students acquire the knowledge and technologies, the basis the course, through lectures, and they acquire further knowledge and technologies and also develop ability to analyze problems and conceive solutions through seminars and research activities. In the doctoral course, in addition to these activities, students will be actively involved in external academic and practical activities to develop their research and development and problem-solving skills.

Learning Outcome 1	Understand the importance of designing, developing, maintaining, and operating social and technological systems
Learning Outcome 2	Acquire technologies for the effective use of management resources, including people, materials, equipment, money, and information
Learning Outcome 3	Cultivate the ability to perceive problems from various perspectives and to conceive and construct solutions to them
Learning Outcome 4	Cultivate the ability to research and develop various technologies related to management systems engineering with a progressive spirit.
Learning Outcome 5	(Further, in doctoral course) Cultivate the ability to actively participate in external academic and practical activities and produce outstanding results.
Learning Outcome 6	

Department	Department of Business Design & Management
Course	Master, Doctor
Degree	Master (Management Engineering), Doctor (Management Engineering)

1. Diploma Policy	<p>For future business management, more than ever, new business development and management will require cutting-edge technology, the ability to transform existing businesses to respond quickly to changes in the business environment, and the ability to improve operations. The purpose of the Department of Business Design and Management is to develop business management leaders in value-creating industries, which are the source of Japan's competitiveness.</p> <p>In the master's program, under the research guidance of all faculty members, research is conducted on themes related to management engineering. Additionally, the master's thesis summarizing the results is examined. When it is recognized that the necessary abilities as a business management leader are acquired, a master's degree (management engineering) is conferred. In the doctoral program, under the research guidance of all faculty members, research on themes related to management engineering is conducted, and the doctoral dissertation summarizing the results is examined. When it is recognized academically and practically that the necessary advanced abilities as a business management leader are acquired, a Ph.D. (management engineering) is conferred.</p>
2. Curriculum Policy	<p>To achieve the established educational goals, students will acquire knowledge and technology related to value creation learned mainly from lecture topics. In addition, students will acquire problem-finding and problem-solving abilities through subjects that focus on exercises and cases so that such knowledge and skills can be put to practical use. Furthermore, students will acquire practical skills through project-based learning, which allows them to experience the business concepts and construction process in a simulated manner. In these lectures and exercises, we will incorporate a great deal of group work and group discussions to cultivate team management and leadership. In research guidance, in addition to guidance in the laboratory to which a student belongs, we will set up a forum for discussions on research with faculty members and students in other laboratories and aim to improve students' research abilities through the acquisition of a wide range of perspectives.</p>

Learning Outcome 1	Acquire the ability to convey what you want to say and understand what others want to convey
Learning Outcome 2	Acquire problem-finding and problem-solving abilities
Learning Outcome 3	Acquire the basic knowledge necessary for managing a value creation business
Learning Outcome 4	Acquire the ability to manage commercialization, in general, and the commercialization of R & D results
Learning Outcome 5	Acquire the ability to manage business operation reforms
Learning Outcome 6	Acquire the ability to demonstrate learning outcomes 1 to 5 to the international community

Department	Department of Civil and Environmental Engineering
Course	Master, Doctor
Degree	Master(Engineering), Doctor(Engineering)

1. Diploma Policy	<p>Civil and environmental engineering is a discipline that aims to build a social foundation so that people can have a safe, comfortable, and healthy life. It goes beyond simply building cities, developing transportation facilities such as roads and railroads, and maintaining infrastructure such as electricity and water. In recent years, the creation of a comprehensive living space that takes into consideration the historical environment and natural landscape, and the restoration of the natural environment at the global scale have become important principles guiding civil engineering. Furthermore, technological development for efficiently maintaining and managing existing infrastructure and upgrading the disaster prevent countermeasures of cities (both in terms of hard and soft types of countermeasures) are also important concepts that civil engineers need to carefully consider.</p> <p>The aim of the Department of Civil and Environmental Engineering is to: 1. Gather experts from the Social Infrastructure Department, the Environmental Disaster Prevention Department, and the Planning / Management Department to respond to a variety and breadth of issues requested by society and 2. Provide a diverse and highly specialized education for the development of leading human resources that can help build and improve society so that people can feel safe and prosper. In the master's program, students conduct research under the guidance of faculty members, with the results being summarized in a thesis. This thesis is evaluated by committee members, who will judge whether a Master's Degree (in Engineering) can be awarded, if the candidate has acquired the necessary skills and ability on how apply basic knowledge of construction engineering. In the PhD program, students undertake original research under the guidance of faculty members, publish papers in domestic and international journals and academic societies, and summarize the research results as doctoral dissertations. A Doctoral Degree (in Engineering) will be given if the doctoral dissertation is judged to have improved existing knowledge in civil engineering and the necessary technological ability to realize such applications has been acquired.</p>
2. Curriculum Policy	<p>In the Master's Program of the Department of Civil Engineering, applied and practical lectures and exercises related to the social infrastructure department, the environmental disaster prevention department, and the planning and management department are offered. Through lectures, exercises and discussions with faculty members, you will be able to explain results or develop the ability to view problems from multiple perspectives by planning and carrying out analysis, experiments, or doing fieldwork to solve various domestic and international issues related to civil engineering. Also, you will develop the ability to design and plan complex to solve complex problems by developing a systems-thinking approach. During the process, you will learn not only how to satisfy the needs of the current generation, but also to obtain a perspective on how to build a sustainable future that does not damage the society of future generations.</p> <p>In the doctoral course of the Department of Civil Engineering, specialized education will be provided to form engineers with extremely high intellectual ability that can understand not only how to maintain and upgrade infrastructure, but also contribute to create harmony with the global environment and achieve a sustainable society.</p> <p>In addition to ensuring the highest ethical standards, we aim to develop human resources who have the potential of leading in terms of creativity, comprehension and internationalization, and who can meet social demands as civil engineers.</p>
Learning Outcome 1	Acquire the ability to make presentations, develop the mathematical prowess to elucidate and theorize the fundamental structure of a phenomenon, and acquire the design and planning ability to solve requests from clients and other problems.
Learning Outcome 2	Acquire communication skills that can inform society on how to elucidate various problems related to infrastructure at home and overseas, both theoretically and experimentally, while formulating original new ideas and methods.
Learning Outcome 3	Attain high engineer ethics that can contribute to the creation of a sustainable future.
Learning Outcome 4	Solve various problems in the world and contribute to future science and technology by acquiring the ability to solve problems independently and to make comprehensive judgments that utilize analytical, thinking, and reasoning skills.
Learning Outcome 5	
Learning Outcome 6	

Department	Department of Earth Sciences, Resources and Environmental Engineering
Course	Master, Doctor
Degree	Master (Science/Engineering), Doctor (Science/Engineering)

1. Diploma Policy	<p>In the master's program, students will acquire the ability to conduct field surveys, laboratory experiments, data analyses, numerical analyses and then multifaceted interpretations and evaluations of various research topics in geosciences and geology, as well as those of a variety of resources and environmental issues facing human society, and to propose comprehensive investigations and solutions. Students can get a degree after having acquired a global perspective, academic research and engineering ethics, communication skills, and internationality, as well as the ability to conduct research and technology development related to (1) earth science as a leader from the diverse points of view (Master of Science), and (2) contribution to the development of resources in harmony with the environment and the solution of various regional and global environmental problems (Master of Engineering).</p> <p>In the doctoral course, students will further develop and deepen these skills and acquire advanced research capabilities in earth science (Doctor of Science), and research and development capabilities in natural resources and environmental issues based on earth science, mathematics, physics, chemistry, and biology (Doctor of Engineering), in order to realize the sustainable activities of human society. Doctoral degrees are conferred upon students who are judged to possess these skills and the ability to consider comprehensively with high ethical standards and dignity, and hence to be suitable for the doctoral degrees (Doctor of Science and Doctor of Engineering).</p>
2. Curriculum Policy	<p>The master's degree program fosters students with advanced research skills in earth science and geology (Master of Science) and those who can carry out research and technological development for sustainable earth resources systems in harmony with the natural environment (Master of Engineering). Students learn the knowledge necessary to challenge unresolved research issues related to the earth, to explore and develop resources efficiently and rationally while preserving the natural environment, and to circulate resources effectively and efficiently, from the diverse perspectives of geology, earth and materials, resources and development, materials and circulation, and humans and environment. In the doctoral course, students will further accumulate their expertise and acquire the ability to discover advanced issues, to plan and implement research, field surveys and experiments, while thinking logically and transmitting information in the fields of earth science (Doctor of Science) and resources and environmental engineering (Doctor of Engineering), with a comprehensive view of the various fields of earth, resources and environment.</p>
Learning Outcome 1	<p>Promotion of a multidimensional global perspective:</p> <p>Students will acquire a global perspective, i.e., the ability to perceive the earth, its resources, and environmental issues on a global scale, observing the entire globe in multiple dimensions, including the interior and surface (with troposphere) spaces of the earth, in conjunction with the time axis of history.</p>
Learning Outcome 2	<p>Thorough fieldwork and experiments (practical learning):</p> <p>Students will acquire the ability to plan fieldwork independently and to appropriately conduct and instruct various physical and chemical experiments and sampling. In addition, students will be enabled to develop and instruct various non-destructive and destructive instrumental analysis techniques, including pretreatment methods for geoscience samples such as rocks and minerals, environmental samples such as air, water and soil, and wastes collected in fields.</p>
Learning Outcome 3	<p>Cultivation of data analysis skills:</p> <p>Students will develop the ability to analyze acquired data from two perspectives; "hypothesis-finding" and "hypothesis-validating." They will acquire the practical computer programming and numerical calculation skills necessary to formulate complex phenomena faced in earth science, geology, resources exploration and development, recycling, climate change, to elucidate mechanisms and to predict future behavior appropriately.</p>
Learning Outcome 4	<p>Development of communication skills:</p> <p>Students will deepen their communication skills through field surveys, discussions with faculty, students and outside parties, and conference presentations. They will also acquire the ability to lead discussions, conduct and guide experiments and field surveys, and actively disseminate information in conference presentations. Furthermore, they will obtain the ability to play an active role as a leader in the research and technological development of earth science, resources and environmental issues.</p>
Learning Outcome 5	<p>Mastery of internationality:</p> <p>In order to respond to overseas geological research, exploration and development of overseas resources, and global-scale environmental problems that transcend national borders, students will experience their overseas research, international conference presentations and exchanges of their expertise with international students, which leads to the development of human resources who can be expected to play an active role in the world.</p>
Learning Outcome 6	<p>Development of research planning and evaluation ability:</p> <p>In carrying out research, students will acquire the ability to fully understand the background, social environment and significance for the research, and then to formulate research plans and to evaluate research results in accordance with them.</p>