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GRADUATE SCHOOL OF SCIENCE AND ENGINEERING KAGOSHIMA UNIVERSITY SEARCH

INQUIRY

Kagoshima University Graduate School of Science and Engineering

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GRADUATE SCHOOL OF SCIENCE AND ENGINEERING

KAGOSHIMA UNIVERSITY

Master's Program

- Mechanical Engineering
- Electrical and Electronics Engineering
- Architecture and Architectural Engineering
- Chemistry, Biotechnology, and Chemical Engineering
- Ocean Civil Engineering
- Information Science and Biomedical Engineering
- Mathematics and Computer Science
- Physics and Astronomy
- Chemistry and BioScience
- Earth and Environmental Sciences

Doctoral Program

- Material Science and Production Engineering
- System Information Science
- Natural Science

Contents

University Calendar

■ **Terms**
First Semester ●4/1to9/30
Second Semester ●10/1to3/31

■ **Matriculation Ceremony** ●Early April
※Matriculation Ceremony in October 10/1

■ **Vacations**
Spring Vacation ●Early April
Summer Vacation ●8/1to9/30
Winter Vacation ●From late December to early January

■ **Conferment Ceremony** ●From late March
※Conferment ceremony in September

Organization

① Department → ② Master's Courses → ③ Doctoral Courses

Faculty of Engineering

Department	Master's Courses	Doctoral Courses
Mechanical Engineering	Mechanical Engineering	Material Science and Production Engineering
Electrical and Electronics Engineering	Electrical and Electronics Engineering	System Information Science
Architecture and Architectural Engineering	Architecture and Architectural Engineering	Natural Science
Chemical Engineering / Chemistry and Biotechnology	Chemistry, Biotechnology, and Chemical Engineering	
Ocean Civil Engineering	Ocean Civil Engineering	
Information Science and Biomedical Engineering	Information Science and Biomedical Engineering	

Faculty of Science

Department	Master's Courses
Mathematics and Computer Science	Mathematics and Computer Science
Physics	Physics and Astronomy
Chemistry and BioScience	Chemistry and BioScience
Earth and Environmental Science	Earth and Environmental Science

Graduate School of Science and Engineering

University education and research facility

- Nansei-Toko Observatory for Earthquakes and Volcanoes

Message from the Dean

Kagoshima University is a research and educational institution located in the rich natural surroundings of southern Kyushu. As a university, we have been constantly ahead of the times. Our principle is to identify the potential in individual students and bring out the best in them, and to develop self-driven human resources with an enterprising spirit.

The science and engineering graduate schools were reorganized into the Graduate School of Science and Engineering in 1998 in order to improve the quality of science and engineering education and research, to apply basic research to innovation and originality in science and engineering, to develop creative human resources, and to live up to the responsibility and function of a university.

The three Doctoral Courses have about 80 students. About 30% of them have graduated university and held a job, and about 20% are international students. About 200 instructors cover a wide selection of education and research fields from basic research to application.

The research fields of the Science Courses are seismic/volcanic activity, biological diversity and astronomy/space science. The seismic/volcanic activity research covers the South Kyushu and Nansei islands areas, the home to one of the world's biggest active volcanoes, Sakurajima. The research is part of the country's earthquake/volcanic eruption prediction program and is led by the Nansei-Toko Observatory for Earthquakes and Volcanoes attached to the university. The bio-diversity research focuses on the area from the Nansei islands including the World Heritage registered site Yakushima, to tropical Asia. The astronomy/space science research has a strong link with the VERA Projects of the National Astronomical Observatory of Japan, and many other international research institutes.

The Engineering Course's research fields are the environment, energy, medical technology and other engineering fields; volcanic activity, localized torrential downpours, typhoons, earthquakes, tsunamis and other natural disasters, motivated by request from the region on disaster prevention/mitigation; and issues that the islands and South Kyushu region face.

As the countries formerly called "developing nations" have acquired high levels of engineering, global competition in the industrial sector is increasingly fierce. Demand is rising for highly specialized and highly skilled human resources with a doctoral degree in science and engineering. They are regarded as globally competitive human resources and the engine of innovation. We hope many talented young researchers choose to pursue their study in the Doctoral Courses of the Graduate School of Science and Engineering and make their part of the world a safer and more prosperous place, and hopefully make contributions to the development of this country.

Eiji Kondo, Dean, Graduate School of Science and Engineering, Kagoshima University

Post-Graduate Program Outline

The Graduate School of Science and Engineering builds on this country's achievements in science and technology and forms the core of Kagoshima University's postgraduate education. As such, we offer two programs: The Master's Program gives students a more specialized education than the one they received during undergraduate study. The Doctoral Program offers cutting-edge, interdisciplinary, and comprehensive education and research opportunities that encourages innovation. We push the boundaries of engineering and science, fusing the two branches together to develop human resources who can compete with their counterparts anywhere in the world and form the foundation of this country's competitive advantage.

In other words, we nurture capable people with basic proficiency in natural science and engineering who can apply their capabilities in a wide range of fields at the same time. Professionals, who understand the necessity of scientific creation, will act proactively, see things from a long-term and comprehensive point of view, and professionals who will put theory into practice.

Education

The following is the Graduate School of Science and Engineering's educational goals based on our philosophy as we engage ourselves in human resource development:

- To develop capable people who possess comprehensive and long-term viewpoints when dealing with natural science and technology and will contribute to making the world a better and happier place for mankind.
- To develop capable people who are creative and can apply that creativity in solving problems in the many fields of natural science where research explores deeper, crosses disciplinary boundaries, and becomes more complex and comprehensive.
- To develop capable people who have advanced intellectual abilities and will put theory into practice to support the technology side of a knowledge-based society.
- To develop capable people who acknowledge the necessity of scientific creation and will contribute to solving problems arising from a rapidly changing society.
- To develop capable people who have high moral standards and will apply them to play a proactive role in the development of local and international communities.

Research

Based on our educational philosophy, our objective is"to" engage ourselves in research whose outcome helps us respond widely and flexibly to the advancement and diversification in the science and engineering fields, ushers in next-generation technology, provides us with advanced and comprehensive knowledge about the nature around us, and nurtures moral standards in students'minds so that they can cope effectively with contemporary issues."

As an educational institution, we train engineers who possess an international point of view and can create new technology that supports a wide range of natural science. Thus, we have the responsibility to conduct research and education in ways that will instill broader outlooks and problem-solving capabilities in students and to engage ourselves in the kinds of research activities that contribute to the development of technology. The following are descriptions of research activities the Graduate School of Science and Engineering puts into practice in accordance with our educational goals:

- Research to produce scientific and technological benefits that make the world a happier and better place for mankind.
- Advanced research in order to use science and technology to support a knowledge-based society in many different ways.
- Research to develop understanding about the necessity of scientific creation in natural science and to contribute to the solution of problems arising from a rapidly changing society.
- Research conducted with high moral standards that allow the local community, the international community, and the nature around us to coexist and prosper together.

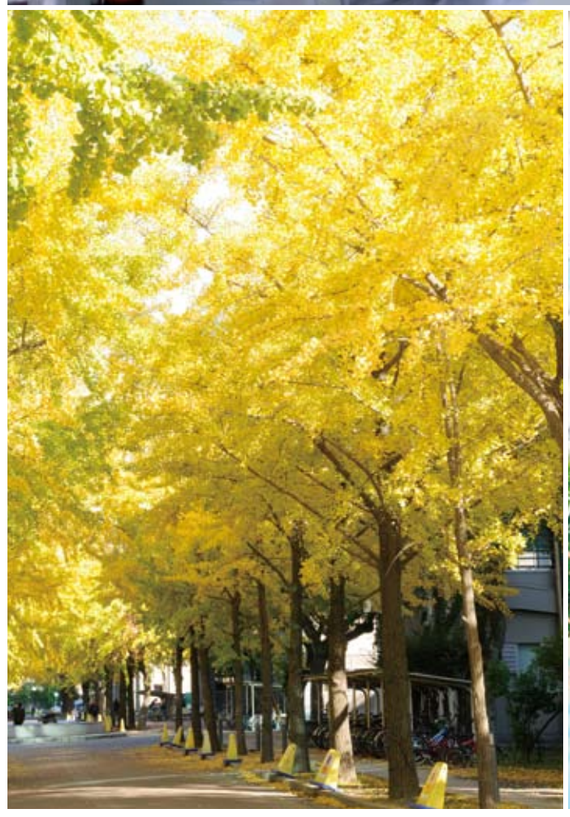
Admission Policy

Philosophy

The philosophy of the Graduate School of Science and Engineering is"to develop truth-loving, highly-ethical, self-motivated individuals who rise up to meet challenges and contribute to the development of regional and international communities through the creation of an education and research system and framework that meets the demands of the times." In order to live up to this philosophy, we have set for ourselves the goal of "developing capable people who study and teach the most recent academic theories and findings in the science and engineering fields. From the basics to practical application, we will go as deep as we can with scientific inquiry and contribute to the development of human civilization." In order to achieve this goal, one further goal is necessary:"To provide engineers, researchers, and highly-specialized, next-generation professionals who possess the sound ethical judgment necessary to confront contemporary issues, comprehensive knowledge about the nature around us, and who will respond extensively and flexibly to the advancement and diversification of natural science."

Prospective Students

- Those who share the philosophy of the Graduate School of Science and Engineering and possess the enthusiasm to put that philosophy into practice, those who have basic scholastic ability, those who think in a scientific and rational manner, and those who can communicate effectively.
- Those who possess an intensely inquiring mind, are keenly interested in science and engineering issues, and will spare no effort in overcoming challenges.
- Those who are intent on acquiring the skills needed to plan a multifaceted scientific observation program and to conduct logical analysis with results to analyze a wide variety of phenomena in the science and engineering fields.
- Those who have the desire to apply the specialized knowledge acquired here for the betterment of the local and the international communities, who embrace diverse cultures and values, and those who possess high moral standards.



Master's Program Outline

Department of Mechanical Engineering

The Department of Mechanical Engineering provides education and research programs in the fields of: Properties and strength of materials, structural design, equipment design and control, manufacturing engineering, various phenomena related to heat and fluids, energy utilization technology, clarification of various engineering phenomena, computer utilization technology in mechanical design, and various system construction techniques.
In this department, we aim to develop engineers who can proactively apply the knowledge necessary for pursuing the advancement of the mechanical engineering field using undergraduate studies in mechanical engineering as a basis. A wide range of education and research in the fields listed above is conducted in three different courses.

Educational Goals (Philosophy) and Prospective Students

Our educational goal is to develop global-minded people with leadership capabilities who can analyze machinery with insight and from a comprehensive perspective. We develop people with advanced and expert practical skills that allow them to actively develop the new technology necessary for constructing machines and mechanical systems in a diversified social environment. Prospective students should fully understand these educational goals and possess the basic academic ability to acquire further expertise through research and study.

Admission Policy

We aim to develop enterprising and leading professionals who possess specialized knowledge, the ability to make sound ethical judgments, and who can pursue world-leading technology through industrial work related to manufacturing.

Prospective Students

- Those who possess highly advanced specialized knowledge which enables the pursuit of world-leading mechanical engineering technology.
- Those who can proactively contribute to the community through industrial work related to manufacturing.
- Those who, equipped with the ability to find solutions to problems as well as the ability to make sound ethical judgments, will play enterprising and leading roles in the world.

Course Work

Production Engineering Course

Education and research fields: Damage Evaluation of High-Temperature Materials, Life Expectancy Prediction, 3D and 4D Material Histology, Metals Development, Ceramics Development and Composite Materials Development, Tribology in metal forming process, Phase Equilibria, Phase Diagrams, and Phase Transformation.

Energy Engineering Course

Education and research fields: Flow Phenomena of Gas-Liquid Two-Phase Flow in Microchannels and Minichannels, Development of Environmental Conservation Apparatus using Fluid Forces, Diesel Engine Combustion of Various Biofuels, Analysis of Supersonic Flow in Industrial Equipment, Thermal Analysis of Nano-Satellites, Investigation of Gas Flow Flowing in Microchannels and Heat Transfer Characteristics as well as their Industrial Application.

Mechanical System Engineering Course

Education and research fields: Manufacturing and Evaluation of Functionally Graded Materials, Intelligent Manufacturing System, Investigation of Self-excited Vibration Generation Mechanisms and their Prevention and Utilization, Intelligent Robotics, Smart Rehabilitation System, Instrument and Control Engineering, Control of Mechanical System and Micro-Nano biomechanics.

Curriculum

In addition to the required"Mechanical Engineering Seminar,"we also provide basic and comprehensive "Advanced Courses in Mechanical Engineering"so that students can gain a comprehensive understanding of the entirety of the coursework. Required and elective courses are classified into: the Production Engineering Course, the Energy Engineering Course, and the Mechanical System Engineering Course. Students are required to obtain more than 6 credits from each course.

Upon matriculation, students create a study program after consultation with their academic advisors, and then decide which classes to take from required and elective classes. Students take these classes in order to become engineers with appropriate ethical values.

Master's Program Outline

Department of Electrical and Electronics Engineering

Scientific technology in a highly-advanced information-oriented society is characterized by the evolution and systemization of cutting-edge individual technologies such as new materials, VLSI, computers, etc. In particular, electronic device engineering for the development of new materials and devices based on new concepts, electrical power engineering for new electrical energy sources and the systematic utilization of electrical energy, and communication systems engineering for the systemization of communication, information, and computer technology, are all basic technologies that are utilized everywhere in the modern world and form the foundation of an information-based society.
In response to the modern organization of electrical and electronics engineering, our depa Molecular Biologyto three courses for education and research purposes: Electronic Device Engineering, Electrical Power Engineering, and Communication Systems Engineering. Our goal is to develop human resources who are qualified to take central and leading roles in the state-of-the-art electrics and electronics fields along with related interdisciplinary areas. Our post-graduate education fosters highly-specialized experts and researchers with a deep understanding of their respective fields, who can see the entire body of scientific technology from a broad point of view, and possess the ability to think outside the box.

Educational Goals (Philosophy) and Prospective Students

Our educational goal is to foster basic skill, and ability to apply that skill in electrical and electronics engineering, in technical experts and researchers who possess a high sense of engineering ethics, an abundance of creativity, and can contribute to an advanced information oriented society. We welcome those with basic academic ability, who understand our educational goals, and are eager to obtain highly specialized capabilities through education and research.

Admission Policy

We aim to develop creative and specialized professionals who can pursue world-leading technology, possess specialized knowledge, have the ability to make sound ethical judgments, and will take leadership roles in an industry that leads an advanced information-oriented society.

Prospective Students

- Those with broad outlooks who can freely utilize their high-level of expertise to respond swiftly and flexibly to the appeal of a diverse and dynamically changing society.
- Those who have the creative capacity to invent new technologies and solve problems related to electrical and electronic engineering.
- Those who are highly-motivated to lead an advanced information-oriented society and those who are committed to contributing to local and global communities.

Course Work

Electronic Device Engineering

An advanced information-oriented society is grounded in a large variety of electronic devices. While conducting research into the operating principles of electronic devices, this course also researches the design of essential materials needed for high-performance electronic devices, manufacturing processes, etc. Research and education focuses mainly on the manufacturing process of devices using high-temperature superconducting oxide thin films, transparent conductive films for displays, photo-rechargeable batteries, physical properties evaluation using photo-electron spectroscopy, the plasma process, laser evaporation, and vapor-phase growth.

Electronic Power Engineering

We offer research and education regarding the theory of system structures in systematic control theory, the design of a robust optimal control system, noise dampening in DC-DC converters as an electric energy conversion system, as well as research on making the systems perform higher, with higher reliability, more intelligent, and smaller in size from both an analytical and experimental aspects. In addition, research is being conducted to improve performance using the applications of superconductor technology in response to the demand for a high-quality, highly-reliable electrical systems. Education and research regarding degradation diagnosis technology of power supply systems in order to upgrade reliability is also being developed.

Communication Systems Engineering

Research and education is conducted on electric circuits, computers, communication instruments, LSI, audio information processing, GPS systems, and power systems to support a networked and information-oriented society. Particular emphasis is placed on optical fiber communication technology, ultra-high frequency circuit technology, system LSI technology, the development of a multi-agent system through soft information processing, construction of a next generation multi-media platform, analysis of electric power system design, and power system development.

Curriculum

"Advanced Electrical and Electronic Engineering"is the core of the course work. It is a high-level lecture class on the fundamentals of the three fields. Students study electronic device basics, digital control theory, and optical communication systems theory through which they gain an understanding of the interrelationship of each field with others in the course.

"Advanced Electrical and Electronic Engineering,"special research, and seminars are required subjects. A total of 12 credits or more should be acquired from both required and elective classes, classified into three groups (A, B, and C) corresponding to each course. 6 or more credits should be obtained from each group.

Master's Program Outline

Department of Architecture and Architectural Engineering

Architecture is a whole spectrum of technologies we humans use to organize and create space for various purposes. The Architecture program is divided into three courses: Architectural Planning, Building Environment, and Building Structure. The course takes over from the undergraduate curriculum and offers comprehensive education and research opportunities.

Educational Goals (Philosophy) and Prospective Students

Our goal is to educate students who have the ability to identify and solve problems, to master the basic academic skills necessary to experiment and analyze, to apply the results of research to their specialized fields and beyond, and to collaborate broadly with different fields so that they become self-reliant scientists, engineers, or researchers in the architectural profession. We welcome individuals with basic scholastic ability and willingness to seek advanced and specialized training through the education and research provided through the Architecture Course.

Admission Policy

We aim to develop professionals and specialists who can inherit humanity's architectural culture and technology, and with consideration for the preservation of the environment take on the responsibility of using advanced technology comprehensively to create and maintain architectural spaces and our living environments.

Prospective Students

- Those who take the initiative to create an environment that can bring out the best of human nature.
- Those who are good communicators and team players ready to take action on their own initiatives.
- Those who can conceptualize ideas to make them reality and those with the ability to identify and solve problems.

Course Work

Architectural Design Course

Education and research fields: Architectural Design for Diverse Use, Urban Landscape Improvement and Preservation of Historical Environments, Improvement of Living Environments and Welfare Environments through Practical Activities in the Region.

Environmental Design Course

Through Environmental Design, students will study and research heating and lightning of living environments, along with indoor environmental control such as air quality, and utilities and equipment used within a building.

Structural Design Course

Through Structural Design, students will research and study structural mechanics, load evaluation, evaluation of structural performance, structural optimization, building materials, and construction engineering.

Architectural Design Work Experience Program

The eligibility requirements for the Architect Examination were changed when the Architect Act was revised in November 2008. Accordingly, the practical experience criteria at the graduate school were also modified. The Architectural Design Work Experience Program was introduced in April 2009 for all three courses (Architectural Design, Structural Design, and Environmental Design). Students will be able to obtain up to two years of practical work experience, depending on the number of credits earned.

Curriculum

【Architectural Design Course】
The Architectural Design Seminar is a studio class focusing on architectural, city/town and community planning, and other practical design work. Students will cultivate creativity, train their ability to make comprehensive decisions, and acquire diverse and practical skills in architectural design.
"Advanced Architectural Design I and II," in contrast to studio work, are classes that give students an opportunity to acquire the necessary viewpoints, techniques, technology, and a wide range of knowledge necessary to design buildings and plan cities through architecture.

【Environmental Design Course】
The Environmental Design Seminar develops students'practical abilities in assessing the overall environmental quality of a building's interior and exterior surroundings from the viewpoints of energy efficiency, ease of use, resource efficiency, artistic effect, and many other various aspects. The Advanced Environmental Design class will provide students with the knowledge and skills necessary to perform comprehensive environmental quality assessment.

【Structural Design Course】
To design a structure, it's necessary to make complete use of a variety of knowledge and techniques. Through the Seminar for Advanced Structural DesignIand II, students will develop the comprehensive ability to design structures, assess external force, perform stress deformation analysis, design infrastructure along with various other structures in structural design. Advanced Structural DesignIand II will provide students with the crucial knowledge and skill required to study structural design.

Master's Program Outline

Department of Chemistry, Biotechnology, and Chemical Engineering

The Department of Chemistry, Biotechnology, and Chemical Engineering conducts research regarding material and life sciences on the foundations of key technology to support a sustainable society. Studies comprise of three courses: In the Applied Chemistry Course and Biotechnology Course, research is centered on high-functional materials, new substance creation, chemical measurement, environmental engineering, biomimetic device, molecular conjugates, and drug/medical-supplies development. The Chemical Engineering Course covers high-functional material processing, reaction/separation process, resource circulation process, environmental conservation/improvement, energy utilization devices, material production process, and bioprocess.
Taking a practical approach by tackling the subjects of health, safety, environment, materials, energy, life phenomena and other such pressing issues of our time, we develop researchers and engineers whose capabilities cover everything from basic research to advanced engineering.

Educational Goals (Philosophy) and Prospective Students

Our mission is to educate highly-specialized, globally-minded professionals who will pursue harmony between society, science, technology, and the natural environment and can bring new science, technology, and industrial structure to the world. Prospective students should share our philosophy and have the basic academic ability to acquire advanced specialized abilities through research and study.

Admission Policy

We aim to educate students who are flexible thinkers and have an inquisitive nature. Prospective students should possess specialized knowledge, the ability to make sound ethical judgments, and the will to bear the responsibility of taking the lead in creation and pursuit of cutting-edge technology.

Prospective Students

- Those who are flexible thinkers and have an inquisitive natures and can use them to solve problems flexibly and creatively.
- Those who can make the most of what they learn to work across national borders.
- Those who have the knowledge and sound ethical judgment necessary to keep pace with chnological innovation.

Course Work

Applied Chemistry Course

Our research and education program aims to foster creativity and ability that excels in developing useful materials, material surface observation techniques, micro-reactors, and environmental conservation technologies, etc. and convey it to the world.

Biotechnology Course

Our research and education program aims to foster in students the ability to develop new drug, medical treatment, diagnosis or bio-based materials for creating a sustainable society, and to generate idea and results based on the educated knowledge and technigue to the world.

Chemical Engineering Course

Our research and education program aims to foster future researchers and engineers who will be active in the fields of "development of eco-friendly chemical processes", construction of energy and resource utilization systems," and invention of highly functional materials."

Curriculum

【Applied Chemistry Course】
A series of lectures aimed at giving students a chance to acquire knowledge and advanced analytical techniques concerning the development of useful materials based on molecular orbital theory, material surface observation technology, new functional materials, and clean energy.

【Biotechnology Course】
A series of lectures aimed at giving students a chance to acquire knowledge concerning elucidation of biological and mdecular mechanisims, drug development, nanotechnology for diagnosis, and biomaterials.

【Chemical Engineering Course】
A series of lectures aimed at giving students a chance to acquire knowledge concerning processes such as reaction, separation, energy transfer/conversion, resource circulation, and functional material processing , and bio processing along with the advanced system engineering which combines these processing elements.

Master's Program Outline

Department of Ocean Civil Engineering

With consideration to the unique characteristics of Japan and Kagoshima Prefecture, the Department of Ocean Civil Engineering engages in deepening the understanding of physical phenomena and matter cycle processes along with research and education in the fields of environmental preservation, disaster prevention, and utilization and development of regions from the coast to the open oceans. Furthermore, the department also conducts research and education in survey, assessment, planning, construction, and maintenance of off-shore structures, near-shore areas and coastal public works.
Using basic and specialized studies in civil engineering and oceanography as a foundation, students acquire advanced knowledge and technical skill in seeking greater understanding of coastal and off-shore regions of the ocean, comprehensive understanding of the global environment, development of environmental conservation, and survey, assessment, planning, construction, and maintenance (including disposal) of disaster prevention public works and off-shore structures.

Educational Goals (Philosophy) and Prospective Students

Our department conducts advanced and specialized education and research in the fields of oceanography and civil engineering. We aim to foster expert engineers who possess a deep understanding of the ocean and ocean-related civil engineering and a high sense of morals with the ability to made sound ethical judgments.

Admission Policy

We welcome students who understand our educational goals, are eager to obtain an advanced education and specialized knowledge through study and research, and possess basic academic ability.

Prospective Students

- ◎Those who have the ability to make free use of the specialized knowledge gained through the study of ocean civil engineering to deal with advances in science and technology with an open mind.
- ◎Those who have the ability to proactively create a sustainable society where humans and nature coexist in symbiosis.
- ◎Those who can deeply respect and support the global scale on which humans and nature interact with each other.

Course Work

Environmental Systems Engineering Course

Education and research focuses on the utilization and development, along with elucidation of physical phenomena in coastal and off-shore regions, environmental conservation, and disaster prevention.

Construction Systems Engineering Course

Education and research focuses on the planning, construction, and maintenance of public works and off-shore structures from near-shore areas to off-coast regions.

Curriculum

Studies are divided into two fields: the Environmental Systems Engineering Seminar and Construction Systems Engineering Seminar are advanced lecture classes, and taking one or the other is required. These seminars provide fundamental and comprehensive knowledge students must acquire.

Master's Program Outline

Department of Information Science and Biomedical Engineering

Information and Communication Technology (ICT) is the basis for a highly advanced information-oriented society, and demands for ICT is growing to make the world human- and environment-friendly. Particularly in Japan, a labor shortage is expected due to a rapidly aging population and low birth rates. Therefore, the realization of a computer-aided society where people of both gender and all ages are able to use computers efficiently is desired. This leads to the need for information system engineers with the knowledge and ability to apply that knowledge, along with a good understanding of the essences of cognitive science and biological systems as it applies to human beings. Additionally, as there has been great interest in experimenting with robots, cars, and other machines that can think, perceive, and make decisions in the same way as humans, the information science field has great potential for future growth. Therefore, engineers who understand the fundamentals of biological functions and how the human brain processes information are needed.
Research and education is divided into three courses: Information Systems Engineering, Brain Cognitive Science, and Biometric Engineering. These courses complement each other and foster highly specialized engineers and researchers.

Educational Goals (Philosophy) and Prospective Students

Our educational goal is to develop information system engineers and researchers who are highly knowledgeable and have the ability to apply that knowledge, who possess a good understanding of the cognitive and biological systems of human beings, and who possess a high sense of ethics. We welcome those with basic academic qualification, who understand our educational goals, and are eager to obtain highly specialized capabilities through education and research.

Admission Policy

We aim to develop creative professionals who can pursue world leading technology, possess specialized knowledge, and will take leadership roles in an industry that leads an advanced information oriented society.

Prospective Students

- ◎Those with highly specialized knowledge and have the ability to make sound ethical judgments in order to cope with a diverse and dynamically changing society.
- ◎Those who possess the creative capacity to invent new technologies and solve problems related to information science and biomedical engineering.
- ◎Those who are highly-motivated to lead an advanced information-oriented society and those who are committed to contributing to local and global communities.

Courses are aimed at fostering students who excel in more than one field based on the broad understanding of information science and biomedical engineering and cover both the information systems field and the cognitive biomedical systems engineering field. For this reason, "Information Systems Engineering Special Lecture" and "Cognitive Biomedical Engineering Special Lecture"are required classes that cover both fundamental and specialized content for their respective field. Students are required to obtain more than 6 credits from both required and elective classes contained in the coursework. The coursework focuses on basic yet comprehensive knowledge that students must acquire in their respective fields. All classes are meant to develop highly-knowledgeable engineers who can support an advanced information-oriented society.

Course Work

Information Systems Engineering Course

Education is focused on computer-based data processing and networking. Through specialized research and seminars, we develop advanced professional engineers and researchers in the field of information systems engineering.

Cognitive Biomedical Systems Engineering

Education is focused on cognitive science and somatometric studies. Through specialized research and seminars we develop advanced professional engineers and researchers in the field of cognitive biomedical systems engineering.

Curriculum

Students will be able to gain highly specialized knowledge through classes from their own major, but also a wider range of knowledge through classes from other courses. Additionally, students will be able to conduct research on secondary subjects under a faculty member other than their academic advisor in "Information Science and Biomedical Engineering Specialized Research III"in order to gain a broader field of view related to information science and biomedical engineering while advancing their studies.

Master's Program Outline

Department of Mathematics and Comptr Science

We teach and research fundamental structures in mathematics and their analysis. We also teach and research on mathematical sciences, which have been diversifying due to interactions with many other scientific and cultural areas, their related areas as well as theoretical fundamentals of information/computer science. Our aim is to enable students to understand fundamental theories in mathematics deeply as well as to understand theories of information/computer science and mathematical analysis of various phenomena of nature and society that become a driving force for developments of mathematical sciences, and to have the ability of applying their knowledge.

Educational Goals (Philosophy) and Prospective Students

Our educational goal is to provide society with professionals having advanced skills in mathematical science and information/computer science, the ability to make comprehensive decisions and a superior sense of ethics based on expertise of mathematics. We welcome those with basic academic ability, who understand these goals, who are eager to study mathematics, mathematical sciences and information/computer sciences in order to deal successfully with advanced topics in these fields.

Admission Policy

We aim to foster creative and leading professionals within the fields related to mathematics and computer science who possess a high level of specialized knowledge and technical skill, the ability to conduct research, and the ability to make sound ethical judgments.

Prospective Students

◎Those who address the challenges in the rapidly developing field of science and technology by making full use of high sense of ethics and the specialized knowledge of mathematics and computer science.

◎Those who innovate and address the new challenges in the related field of mathematics and computer science from their own motive and who have willingness and capability to respond needs of society.

◎Those who can support social foundations by contributing to regional and global communities with a strong sense of duty.

Course Work

Pure Mathematics Course

Mathematics provides a theoretical basis vital to the progress of science and technology brought by the development of natural science. This course focuses on research and education regarding the theoretical system of mathematics and development of research and education on fundamental structure of mathematics in the subjects of algebra, analysis, and geometry.

Environmental Systems Engineering Course

This course focuses on research and education regarding the theoretical aspects of mathematical science and its applications along with analysis of the various phenomena found in nature and society.

Construction Systems Engineering Course

The remarkable advancement of computer technology in recent years has also resulted in the rapid development of the information/computer science. This course conducts research and education on mathematical theory in this field and its applications.

Curriculum

To provide a wider range of advanced education and research focused on specialty fields compared to education at the undergraduate level, we offer required subjects corresponding to 16 credits.

"Advanced Studies in Mathematics and Computer Science" covers the fundamental and comprehensive materials necessary to study mathematics and computer science.

In addition to the required subjects(16 credits), students must obtain a total of 30 credits or more from elective subjects, including 6 subjects from the "Pure Mathematics", "Applied Mathematics", or "Computer Science" course. These subjects should be selected upon consultation with faculty advisors.

Master's Program Outline

Department of Physics and Astronomy

Physics, including astronomy, forms the foundation of science and technology that address all phenomena in the universe and that contribute all of developments in human life. It spans a wide range, from Planck-scale microcosmos of elementary particles, through the meter scale of our daily life, to the gigapasec scale of cosmology.
The Department of Physics and Astronomy is promoting researches on basic and fundamental laws of the nature, such as physical properties of matters under very low temperature or strong magnetic fields, chaotic or nonlinear dynamics, observational and numerical astronomy, and meteorology with space science. The department also aims education to train logical and practical abilities for solving complex problems, which mankind faces or which next generation needs to solve, using physical formulae.
Our department is in alliance with the JAXA (Japan Aerospace exploration Agency) and the NAOJ (National Astronomical Observatory of Japan) to forma a cooperated graduate school. We have a cooperation agreement with Ehime University to conduct joint research and education programs in both the graduate and undergraduate levels. We have also made cooperation agreements with the NAOJ, Hokkaido University, University of Tokyo, Tokyo Institute of Technology, Nagoya University, Kyoto University, and Hiroshima University for research and education in the field of infrared astronomy. These collaborations promote space researches using spacecrafts and the VERA Telescope to study the structures and characteristics of the celestial bodies in the Milky Way Galaxy.

Educational Goals (Philosophy) and Prospective Students

Our educational goal is to train researchers and technicians, who possess both deep insight in physics and flexible ability in studying natural sciences, to promote modern science and technology. We call for those who own basic academic ability, those who understand our educational goals, and those who are eager to obtain highly specialized skills through education and research.

Admission Policy

We aim to admit creative, skilled, and leading professionals via our researches such as material physics, theoretical physics, observational astronomy, and theoretical astrophysics to nurture solubility for unprecedented problems.

Prospective Students

◎Those who can apply their specialized abilities and flexible thinking skills in physics to work on deepening and advancing science and technology.

◎Those who can contribute to the creation of a sustainable society in the global environment.

◎Those who can commit human activity in the natural world with a deep insight and a global mind.

Course Work

Physics Course

Education and researches focusing on deepening our understanding of electronic and magnetic properties of solids, thin films and solid surfaces by first-principle calculations, the searches for new functional materials, studies on basic chaos theory, understanding of various non-linear phenomena, investigation of characteristics in alternating fields of dielectrics, electric, magnetic, and thermodynamic research on different types of strongly correlated multilayer materials including magnetic substances such as oxide superconductors under high temperature, rare earth elements, and transition metal elements.

Astronomy Course

Researches on astronomy and space science. Observational and theoretical studies of the galactic dynamics and structure, Physical processes in star formation and evolution, and high-energy phenomena in the vicinity of black holes, using optical/infrared and radio telescopes. Theoretical and numerical approaches for studying galactic dynamics, cosmology, and gravity.

Curriculum

A total of 30 units or more must be obtained. 16 must be from required classes and more than 6 credits are needed from elective classes related to the student's selected course. Other credits should be obtained after consultations with the student's supervisor in accordance with a student's research field and chosen course.

Master's Program Outline

Department of Chemistry and BioScience

Advanced research in the study of chemistry and biology has been making enormous progress while each field continues to exert its influence on the other. In the department of chemistry and bioscience we foster human resources who will actively contribute to a wide range of the fields through education and research. Lecture classes are provided in basic chemistry, biochemistry, molecular biology, biology, and physiology. Our goal is to have students recognize the behavior of simple molecules, and understand the complex structures of molecules and the phenomenon of life on the bases of molecules. In order to advance knowledge and skill in a specific field, students can choose one of the following courses: Molecular Photonics and Colloid Science, Organic and Biological Chemistry, or Bio-Dynamics. We aim to develop specialists who can actively contribute to the fields of chemistry and biology.

Educational Goals (Philosophy) and Prospective Students

Our educational goal is to foster people who possess a broad range of fundamental knowledge and the ability to apply their knowledge and technical skill actively in the fields of chemistry and biology. Prospective students should understand these educational goals and possess the basic academic ability to acquire highly specialized expertise through research and education.

Admission Policy

We aim to develop specialized professionals who will advance the world of chemistry and biology while at the same time deepen their own understanding of both fields. We also aim to develop professionals who possess the technical skill and ability to conduct research in both chemistry and biology.

Prospective Students

- Those who can think flexibly, possess an inquisitive nature, and can seek creative solutions to issues related to chemistry and biology.
- Those who possess expert knowledge in chemistry and biology, and will positively work to construct a sustainable global community where nature and human beings can coexist.
- Those who possess the ability to make sound ethical judgments and make global contributions.

Course Work

Molecular Photonics and Colloid Science Course

Education and research related to photochemistry of molecular aggregates and condensed systems, chemistry of functional molecular aggregates, environmental catalyst chemistry, clean energy, and medical care.

Organic and Biological Chemistry Course

Education and research related to the chemistry of naturally occuring organic compounds, synthesis and organic reactions of organic compounds, and protein chemistry and antibody/peptide molecule design.

Bio-Dynamics Course

Education and research related to symbiosis between plants and microorganisms, gene expression analysis of viruses of plants and microorganisms, body axis formation of vertebrates, reproduction and generation of marine invertebrates, circadian rhythm of animals, neuro-physiology of taste and neural mechanisms of taste behavior of fish.

Curriculum

A variety of classes are offered to allow students to obtain a higher level of expertise and skill using knowledge acquired during their undergraduate studies as a basis. Chemistry and Bioscience Thesis Reading, Chemistry and Bioscience Special Research, and Special Lecture on Advanced Chemistry (Master's Program) are required subjects. Students are required to take a total number of 16 credits from the above.

A total of 30 credits or more must be obtained. 16 must be from required classes and more than 6 credits are needed from elective classes related to the student's selected course. Other credits should be obtained from other classes after consultations with a faculty advisor.

Master's Program Outline

Department of Earth and Environmental Sciences

The department of earth and environmental sciences promotes education and research from a global perspective through comprehensive understanding of the Earth, a place where human live and interact, which comprises of geosphere, hydrosphere, and biosphere. The department of earth and environmental sciences carry out research and education in order to understand the actual conditions of the natural environment and basic mechanism of fundamental changes that occur, emphasis is put particularly on the fields of geology, biology, and chemistry. Students are encouraged to conduct field work to directly observe the geosphere, hydrosphere, and biosphere.
We aim to foster human resources who can think flexibly and comprehensively, who possess not only highly advanced and specialized knowledge but a wide range of knowledge and learning which goes beyond the conventional realm of their academic fields.

Educational Goals (Philosophy) and Prospective Students

Our educational goal is to develop people with a good sense of ethics who can think flexibly and comprehensively and possess systematic knowledge of the natural environment. Prospective students should understand these educational goals and possess the basic academic ability to acquire a high level of specialized expertise through study and research.

Admission Policy

We aim to develop creative and professionals who understand the geosphere, hydrosphere, and biosphere from a comprehensive perspective, and possess the ability to make sound ethical judgments and can lead the world, with specialized knowledge of the earth, a place where we live.

Prospective Students

- Those who will advance scientific technology by using their specialized ability concerning the earth and environmental sciences from a broad perspective.
- Those who can positively work to construct a sustainable global community where nature and human beings coexist.
- Those who possess a deep reverence for the global scale on which humans interact with nature and the ability to work with that sense of reverence.

Course Work

Geological Science Course

Education and research fields: Understanding of Tectonic History from the Southwestern Japanese Arc to the Ryukyu Arc, Fossil Based Study of Biological Evolution, Concrete Analysis of the Earth's Biosphere and Maintenance System of the Global Environment, Prevention of Landslide Disasters, Earthquakes and Volcanic Eruptions, Understanding of Plate Tectonics between the Kyushu Mainland and the Nansei Islands and Prediction of Earthquakes and Volcanic Eruptions.

Environmental Analysis Course

Education and research fields: Development of Highly Sensitive Analytical Methods for Measurement of Trace Substance such as Mercury that would affect the Environment and furthering the Understanding of the Chemical Forms of Trace Elements in the Environment (air, water, substratum, organisms) in the Field of Inorganic Analytical Chemistry; Study of Ion Dissolution Status and furthering this Material's Chemical Reactions.

Biodiversity Course

Education and research fields: Ecological Studies of Land Based on Flora and Mollusks from Southwest Japan to Southeast Asia, Studies in Genetic Diversity on the Molecular and Cellular Levels, and Classification and Ecology of Benthic Organisms in Shallow and Freshwater Environments.

Curriculum

Research of the natural environment requires multiple approaches from various fields. Students are encouraged to study a different number of fields not limited to the particular field of their specialization. A total of 30 credits or more must be obtained. 16 must be from required classes and more than 6 credits are needed from elective classes related to the student's selected course. Other credits should be obtained after consultations with a student's respective faculty advisor in accordance with a student's research field and chosen course.

Doctoral Program Outline

Department of Material Science and Production Engineering

In this course, we aim to develop new materials and to establish production systems in order to support a nation founded in science and technology. With material creation, construction of manufacturing processes, and a wide range of basic knowledge which allows coexistence with the environment on the basis of the rational use of energy, we aim to provide fundamental and comprehensive education and research that can be used to flexibly cope with complex and diversified industrial activities and changes in the natural environment.
We aim to develop researchers who can take a leading role in research/education institutes and highly skilled engineers in the industrial field. For this purpose, our department is divided into three key sections: Structural Design Engineering, Industrial Process Engineering, and Material Science.

Educational Goals (Philosophy) and Prospective Students

- Those who have a strong interest in exploring the various challenges offered in the material science and production engineering fields, and will positively engage themselves in research.
- Those who have a wide range of interests in developing interdisciplinary education programs and will make an effort to commit to working in a new field.
- Those who aim to become highly-specialized professionals who will take the initiative to lead the world.

Admission Policy

We aim to develop highly capable intellectuals who will serve as researchers, engineers, and educators, who will accomplish many achievements in their expertise fields in Structural Design Engineering, Industrial Process Engineering, and Material Science, and who will solve future problems in society by utilizing the ability acquired through research.

Post-Graduate Education

◎Post-graduate education focused on doctoral students motivated to solve various problems related to structural design with the aim of manufacturing diverse, larger, lighter, and highly safe structures in an economical manner.

◎Post-graduate education focused on doctoral students who are motivated to solve various problems related to the exploration of various theories and technology along with creating theories concerning construction of production processes using the manufacturing of different materials, the machining method, and bio-functions.

◎Post-graduate education focused on doctoral students who will be able to contribute to the development of human beings by aiming to solve various problems related to advanced technology. To this end,students will study on physical and chemical phenomena of materials in the levels of electron, molecule, or atomic sizes. Furthermore, on the basis of fundamental knowledge, they will also conduct advanced and comprehensive research and development regarding the most advanced functional materials.

Field of nucleus

Structural Design Engineering

The structural design engineering section conducts advanced education and research to solve various problems relating to design and construction of structures more safely and economically under the consideration of diversification, larger in size, and lighter in weight of them.

Industrial Process Engineering

The industrial process engineering section conducts advanced education and research in the basic industrial problems concerning various theories of the construction of production processes in the manufacturing of different materials, machining methods, and bio-functions as well as the manufacturing of various materials for use in basic processes in production of industrial products.

Material Science Engineering

The material science engineering section conducts advanced education and research in the physical and chemical phenomena of materials studied on an electric, particle, and atomic level. Based on fundamental knowledge, education and research is further conducted to deepen understanding of the various factors needed to perform cutting-edge, comprehensive research and development regarding a variety of functional materials.

Doctoral Program Outline

Department of System Information Science

In this course, we aim to foster human resources who will be able to create and develop highly specialized research covering a broad range of areas. At the end of the course, students will acquire the cutting-edge knowledge in a particular specialty along with basic knowledge related to a number of additional research fields characterized by the systematization of advanced individual technologies into the most advanced technological system.
We aim to develop human resources who can utilize their expert knowledge in system information engineering, pioneering cutting-edge research as highly specialized professionals to cope with the advancement of academic research in a wide range of areas, and be able to make contributions to the global community. For this purpose, our department is divided into three sections: Systems Control Engineering, Intelligent Information Engineering, and Environmental Systems Engineering.

Educational Goals (Philosophy) and Prospective Students

- Those who are strongly interested in acquiring expert knowledge and cutting-edge skills and are well motivated to commit themselves to research.
- Those who have the ability to pioneer a cutting-edge field, and are willing to make the effort to solve problems.
- Those who aim to become highly specialized professionals and will take the initiative in leading the world.

Admission Policy

Research on systems control, intelligent information, and biological material science are conducted from the basic and universal perspectives of applied science. We aim to develop intellectual scientists who are, supported by deep insight and a broad range of knowledge and those who can challenge the unknown in society by utilizing their capacity to solve problems fostered by research activities.

Post-Graduate Education

◎Post-graduate education focuses on doctorate students who are globally minded and can effectively exchange information, conduct advanced and comprehensive research and education on various problems related to the specific purpose of system control accordingly.

◎Post-graduate education focuses on doctorate students who can contribute to the advancement of the advanced information oriented society of the 21st century. In order to support such an information oriented society, students conduct research and education on human thinking, problem solving, and intelligence as the language of communication and the management and processing of information and process information.

◎Post-graduate education focuses on doctorate students who can contribute to the development of human beings who are able to solve various problems related to theoretically approaching and mathematical analysis of highly composite and complex systems, including the system of life phenomena or living bodies in an electronic and sub-atomic environment.

Field of nucleus

Division of Environmental System Engineering

Research and education characterized by the basic function of information activity, information processing, information transmission, and information management.

Division of Systematic Control Engineering

Research and education related to human thinking, problem solving, and intelligence such as languages to cope with communication, information management, and information processing. In other words, research and education related to the basic functions that support an advanced information-oriented society.

Division of Intellectual Information Engineering

Research and education to analyze various problems related to mathematical analysis and use of theory to approach highly composite complex systems as well as systems of life phenomena, and living bodies in an electronic and sub-atomic environment.

Doctoral Program Outline

Department of Natural Science

In this course, we aim to develop students who can conduct research that will receive international recognition in a large number of fields. To this end students must possess a wide range of basic knowledge on the symbiotic relationships between life and the environment as well as the structure and changes occurring in the earth and universe (the natural environment) where such life exists. Students will acquire cutting-edge knowledge in various interdisciplinary fields.
Upon the completion of doctorate program, we aim to develop researchers and engineers who, as teaching staff, civil servants, or highly specialized professionals in industry, can conduct interdisciplinary education and research and can contribute widely to the academic society and industrial world. For this purpose, our department is divided into three sections: Space Environment, Earth Environment, and Life Science.

Educational Goals (Philosophy) and Prospective Students

- Those who have a great interest in a wide range of academic areas offered by the natural science course and those who are motivated to work on making new discoveries
- Those who have the ability to create new technology, and are willing to spare no effort to solving problems
- Those who are globally minded and are willing to develop internationally recognized research

Admission Policy

Education and research related to natural science, physics, space, and earth environmental science are conducted from the basic and universal perspectives of science and engineering. We aim to develop students who will become researchers, engineers, or educators equipped with a high capability to challenge future issues in society by their problem-solving abilities fostered through post-graduate research.

Post-Graduate Education

◎Post-graduate education focused on doctorate students who can use physics to research and investigate natural truths as represented by the universe, seek the ways to find those truths, and are highly motivated to work on solving various problems involving local and international communities.

◎Post-graduate education focused on doctorate students who can contribute to the development of human beings through comprehensive understanding of the history and environmental change of the earth, the evolution of living organisms, and the interaction between the natural environment and human activity so that environmental conservation and regional disaster prevention can be implemented systematically and comprehensively.

◎Post-graduate education focused on doctorate students who can conduct research and education on various functions of living bodies along with life and environment systematically and comprehensively, students who are highly motivated to solve various problems regarding the understanding of the theoretical approach to basic structure of materials that living bodies are comprised of, and students who are willing to solve problems concerning understanding and theoretical approaches to the above.

Field of nucleus

Space Science

Education and research using physics as a basis to uncover the truths of nature as represented by universe, to seek methods to discover that truth, and focus on the research of truth of natural world by using knowledge of physics.

Earth and Environmental Sciences

Comprehensive education and research on the history and environmental change of the earth, evolution of living organisms, and interaction between the natural environment and human activity. Development of education and research to clarify the various factors necessary to implement environmental conservation and regional disaster prevention systematically and comprehensively.

Biology and Bio-Science

Systematic and comprehensive education and research on the various functions of living bodies as well as life and environment. Development of research and education to cope with diverse phenomena in solving various problems related to the theoretical approach of understanding of the basic structure of materials of living bodies.

Curriculum

The educational program centers on seminars in each division. Students are required to take classes in each core field along with subjects common to all divisions such as the"Cutting-Edge Science Special Lecture,"etc.

Post-Graduate Program Course and Admission Guide

Master's Program

●Enrolled for two or more years ●Earned a total of more than 30 credits including more than the 20 pre-designated credits in each relevant department ●Pass the thesis assessment and final examination

The following is the number of credits which must be obtained from department:

Major	Required Classes	Required Electives	Other Departments※1	Early Completion Course※2
Mechanical Engineering	10 credits or more	6 credits or more	Up to 10 credits	Credits for required subjects in the second year (4 credits) can be exempted by taking the equivalent number of credits from electives.
Electrical and Electronics Engineering	12 credits or more	6 credits or more		
Architecture and Architectural Engineering	9 credits or more	10 credits or more		Credits for required and elective classes for the second year (credits corresponding to the number of classes) can be exempted by taking the equivalent number of credits from electives.
Chemistry, Biotechnology, and Chemical Engineering	10 credits or more	10 credits or more		Credits for required subjects in the second year (2 credits) can be exempted by taking the equivalent number of credits from electives.
Ocean Civil Engineering	8 credits or more	8 credits or more		Credits for required subjects in the second year (1 credit corresponding to the number of classes) can be exempted by taking the equivalent number of credits from electives.
Information Science and Biomedical Engineering	12 credits or more	6 credits or more		Credits for required subjects in the second year (4 credits) can be exempted by taking the equivalent number of credits from electives.
Mathematics and Computer Science	16 credits or more	6 credits or more	Up to 8 credits	Credits for required subjects in the second year (8 credits) can be exempted by taking the equivalent number of credits from electives.
Physics and Astronomy				
Chemistry and BioScience				
Earth and Environmental Science				

※1 Including class credits (credits) of other departments, divisions, or Japanese/foreign graduate schools
※2 Early completion in the case of a student enrolled more than one year and considered to be in excellent academic standing

Doctoral Program

●Enrolled three or more years ●Earned a total of 12 credits or more including 4 credits or more from lectures【・Credits from elective classes can be earned from any department, however they must be from classes that have not already been taken during the Master's portion of the course.】 ●Pass the doctoral dissertation assessment and final examination

The following is the number of credits required from department

Major	Required Classes※1	Elective Classes※2	Other Departments※3	Special Seminar Ⅰ	Special Seminar Ⅱ
Material Science and Production Engineering	5 credits or more	7 credits or more	Up to 4 credits	Credits can be earned in Master's Program	Credits can be earned in the first year of Doctor's Program
System Information Science					
Natural Science					

※1 Including seminars in the relevant department (no credits) ※2 Including more than 4 credits earned in lectures
※3 Including class credits (credits) from other departments, divisions, or Japanese/foreign graduate schools

Entry Guide

Selection	Master's Program	Doctoral Program
General Selection	Oral examination ▸July Written examination ▸August	August/February
Employed Individuals Special Selection	August/February	
Foreign Student Special Selection		

It is preferable that those wishing to apply for the Doctoral Program contact the relevant faculty advisor to discuss the content of the doctorate dissertation in advance.

Contact us

Contact for exam

Application details and important information (i.e., qualification, quota, application period, selection method, examination date) can be found on the homepage (www.kagoshima-u.ac.jp/exam)

GRADUATE SCHOOL OF SCIENCE AND ENGINEERING KAGOSHIMA UNIVERSITY SEARCH

For more information on application and the graduate school please contact

Graduate School Section, Graduate School Administrative Division, Administration Department, Graduate School of Science and Engineering, Kagoshima University
1-21-40 Korimoto, Kagoshima City, 890-0065
Tel .099-285-8234 Fax.099-285-3410
✉daigakuin@eng.kagoshima-u.ac.jp

Agreements with Institutions

Cooperation Agreements

Internal Institutions

Computing and Communications Center

The Kagoshima University Museum

External Institutions **【Affiliated Since】**

National Institute of Advanced Industrial Science Technology（AIST） 2004/04/01～

National Institute for Materials Science（NIMS） 2004/10/01～

Port and Airport Research Institute（PARI） 2008/07/01～

National Astronomical Observatory of Japan（NAOJ） 2004/04/01～

Japan Aerospace Exploration Agency（JAXA） 2001/07/31～

National Institute for Minamata Diseas（NIMD） 2009/04/01～

Academic Exchange Agreements

Japan **【Agreement Date】**

Project to establish network of optical and infrared astronomy research and education centers between universities 2011/04/01～

Graduate School of Science and Engineering, University of Miyazaki 2010/03/31～

Graduate School of Science and Engineering（Science）, Ehime University, Research Center for Space and Cosmic Evolution 2010/03/29～

Foreign Countries **【Agreement Date】**

Universiti Teknologi PETRONAS(Malaysia) 2012/07/06～

Faculty of Mechanical Engineering Universiti Teknologi Malaysia(Malaysia) 2011/12/26～

Veer Narmad South Gujarat University(India) 2011/09/13～

AGREEMENT TO CREATE AN INTERNATIONAL NETWORK（GDRI）
“France-Japan-Vietnam Network in Singularity Theory” 2011/01/01～

Ben-Gurion University of the Negev(Israel) 2010/01/05～

University of Indonesia, Faculty of Engineering(Indonesia) 2009/12/09～

Jawaharlal Nehru Centre for Advanced Scientific Research(India) 2009/06/23～

Bhabha Atomic Research Centre(India) 2009/09/16～

National Cheng Kung University, Engineering College(Taiwan) 2005/12/23～

The Petroleum and Petrochemical College Chulalongkorn University 2005/07/28～

National Kaohsiung Marine University(Taiwan)*Inter-University 2013/10/23～

King Mongkut's University of Technology Thonburi(Thailand) *Inter-University 2013/09/16～

Institut Teknologi Bandung(Indonesia) *Inter-University 2010/11/22～

Linkoping University(Sweden) *Inter-University 2010/06/11～

National Institute of Technology Karnataka(India) *Inter-University 2005/03/23～

Northeastern University(China) *Inter-University 2004/12/03～

University of Technology,Sydney(Australia) *Inter-University 2000/03/01～

Associated Facilities

Nansei-Toko Observatory for Earthquakes and Volcanoes

The establishment of the Nansei-Toko Observatory for Earthquakes and Volcanoes was approved on April 11, 1991 as a facility to promote earthquake and volcanic eruption prediction research in part due to strong requests by the local community.
In November 1994, a two-story building was constructed in Terayama, Yoshino-Cho in the northern part of Kagoshima City. After completion, the base of observations and studies were shifted to this new site from the main Kagoshima University campus site at Korimoto.
This observatory sits in a quiet environment at a prime location for direct observation of volcanoes, as it commands a close view of Sakurajima volcano over Kagoshima Bay and the Kirishima volcanoes Kaimon volcano in the distance

Sakurajima volcano as viewed from the observatory.
In the distance, Kaimon volcano can be seen on the right, and the Kirishima volcanoes on the left.

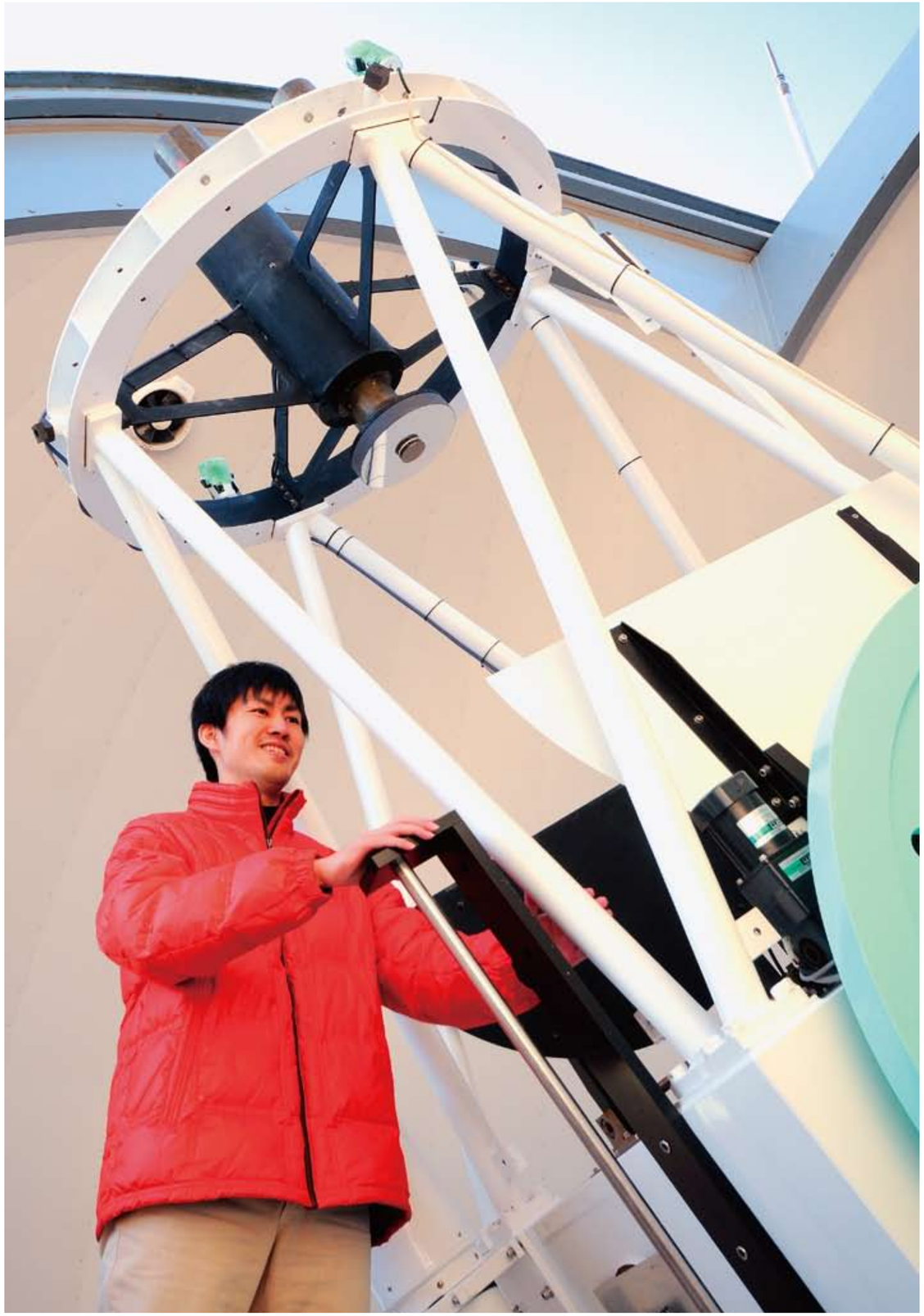
The main areas of study is southern Kyushu and northern part of Nansei Islands (north of Tokunoshima in Nansei-Toko Island Arc from south of Kyushu to east of Taiwan). In this area earthquakes and volcanic activity are frequently observed due to the steep subduction of the Philippine Sea Plate and the expansion of the Okinawa Trough. Additionally, five large calderas (Aso, Kakuto, Aira, Ata, and Kikai) are linked within an area of merely 260 km. This is a very unique phenomenon that cannot be seen anywhere else on earth.

A large amount of thermal energy is needed to create such phenomena. However, the conventional plate tectonics framework known as plate movement of the earth's surface is difficult to account for such energy supply.
To solve this problem, it is necessary to create a new theory for earth's dynamics based on a global ideas in considering the deeper part of the earth. Understanding of tectonics in“Nansei-Toko”(Nansei islands) will contribute to the understanding of plate movement in the entire Pan-Pacific area. This will surely lead to further contribution to the basic research in earthquake and volcanic eruption prediction. Thus“, Nansei-Toko Island Arc”can be said to be an important field for the development of earth sciences.

Research

●Seismic activity is monitored using data obtained from more than 100 seismic stations and from ocean bottom seismometers deployed between southern Kyushu and the northern part of Nansei Islands (north of Tokunoshima). Observation and research of crustal deformation using GPS is also conducted. The research contributes to the understanding of stress fields and mechanisms of earthquakes.

●Study of dynamic phenomena such as earthquakes and ground deformations accompanied by volcanic activity have been performed in southern Kyushu and the Tokara islands. Researches are to broaden understanding of the fields and time sequences of the phenomena by improving observation accuracy. In addition, observations for analyzing the seismological and electromagnetic structure inside volcanic edifices were made in order to study the relationship between dynamic phenomena occurrence sites and background fields.



List of faculty members of the Graduate School of Science and Engineering

The following specialists provide research and education support to students and help find solutions to student academic issues.

※Please add “kagoshima-u.ac.jp”to the end of the addresses listed below under “E-mail”.

Mechanical Engineering

Title	Name	Specialty Field	E-mail
Professor	FUKUI Yasuyoshi	Materials for Machines	fukui@mech.
	IDE Hideo	Fluid Engineering, Multiphase Flow Dynamics	ide@mech.
	KONDO Eiji	Advanced Machining, Vibration Engineering	kondo@mech.
	FUKUHARA Minoru	Fluid Machinery, Fluid Engineering	fukuhara@mech.
	IKEDA toru	Fracture mechanics, Computational Mechanics	ikeda@mech.
	ADACHI Yoshitaka	3D4D Material Science, Advanced Steels	adachi@mech.
	KINOSHITA Eiji	Heat Engine	kinoshit@mech.
	MATSUZAKI Kenichiro	Mechanical Dynamics	matsuzaki@mech.
	KOMAZAKI Shinichi	Environmental Strength Studies	komazaki@mech.
Associate Professor	YU Yong	Robot Engineering	yu@mech.
	NAKAMURA Yuzo	Materials Engineering, Strength of Materials	nakamura@mech.
	KAMITANI Shunpei	Tribology	kamitani@mech.
	HAYASHI Ryota	Robotics Control Engineering	hayashi@mech.
	KUMAZAWA Noriyoshi	Control Engineering	kumazawa@mech.
	KATANODA Hiroshi	Compressible Fluid Dynamics	katanoda@mech.
	HONG Chungpyo	Heat-Transfer Engineering	hong@mech.
	NISHIMURA Yuki	Non-Linear Control	yunishi@mech.
	MURAKOSHI Michio	Bioengineering, Mechanical Dynamics	michio@mech.
Assistant Professor	GUO Yong-Ming	Computational Mechanics	guoy@mech.
	ODA Mikio	Strength of Materials	oda@mech.
	NISHIDA Tomoyuki	Materials Engineering	nishida@mech.
	NISHIKI Shinnosuke	Numerical Study of Combustion Flow	nishiki@mech.
	OTAKA Takashi	Fluid Engineering	ohtaka@mech.
	NAKAO Mitsuhiro	Fluid Engineering	nakao@mech.
	SADAMATU Sunao	Crystal Plasticity, Electron Microscopy	sadamatsu@mech.

Electrical and Electronics Engineering

Title	Name	Specialty Field	E-mail
Professor	OBARA Kozo	Applied Ion Engineering	kozo@eee.
	MIYAJIMA Hiromi	Parallel Processing Engineering	miya@eee.
	HAKURAKU Yoshinori	Superconductivity Engineering	hakuraku@eee.
	TERADA Norio	Superconductor Materials and Device	terada@eee.
	FUKUSHIMA Seiji	Optical Wireless Communication Systems	fukushima@eee
	KAWABATA Shuma	Superconductor Power Application	kawabata@eee.
	YAMAMOTO Kichiro	Power Electronics	yamamoto@eee.
	NISHIKAWA Kenjiro	Microwave Engineering	nishikawa@eee.
Associate Professor	TANAKA Tetsuro	Power Electronics	tetsu@eee.
	OHHATA Kenichi	Electric Circuit Engineering	k-ohhata@eee.
	HORIE Yuji	Material Engineering	horie@eee.
	HACHINO Tomohiro	Systems Control Engineering	hachino@eee.
	SHIGEI Noritaka	Signal Processing	shigei@eee.
	OKUDA Tetsuji	Condensed Matter Physics	okuda@eee.
	TERAI Yoshikazu	Semiconductor device fabrication	terai@eee.
	KAWAGOE Akifumi	Superconductor Power Application	kawagoe@eee.
Assistant Professor	NOMIYAMA Teruaki	Material Engineering	teru@eee.
	MANAKA Hiroki	Magnetic Physics	manaka@eee.
	IGARASHI Yasutaka	Information Security	igarashi@eee.
	HIRAYAMA Tadashi	Linear Motor	hirayama@eee.
	NAKAHARA Hiroki	Reconfigurable Architecture	nakahara@eee.
	AKIYAMA Masahiro	High Voltage, Pulsed Power, Bioelectrics	akiyama@eee.

Architecture and Architectural Engineering

Title	Name	Specialty Field	E-mail
Professor	HONMA Toshio	Structural mechanics, Continuum Mechanics, Computational Mechanics, Computational Engineering	honma@aae.
	AJISAKA Toru	Architectural Design, Architectural Planning, Regional Revitalization	ajisaka@aae.
	SHIOYA Shinichi	Reinforced Concrete Structures for Building, Seismic Design for Building,Timber Structure for Building	shin@aae.
	NIMIYA Hideyo	Environmental Architectural Engineering, Architectural Equipment Engineering	nimiya@aae.
	KIKATA Junne	Architecture, Urban Planning	kikata@aae.
Associate Professor	KUROKAWA Yoshiyuki	Building Materials, Construction Engineering	kurokawa@aae.
	SHIBATA Akihiro	Architectural Design, Design Theory	shibata@aae.
	SAWADA Kiichiro	Seismicity of Corrosive Steel Members, Optimization of Steel Structure, Seismic Design of Steel Structure	kich@aae.
	SOGA Kazuhiro	Environmental Engineering	soga@aae.
	SAKAINO Kentaro	Architectural Planning, Housing and Environmental Design	sakaino@aae.
Assistant Professor	MASUDOME Makiko	Architectural Design,Architectural Planning	masudome@aae.
	KOYAMA Yusuke	Urban Planning, Housing Policy	koyama@aae.
	YOKOSUKA Yohei	Structural Mechanics	yokosuka@aae.

Chemistry, Biotechnology, and Chemical Engineering

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