



Graduate School of Science
and Technology
Kumamoto University

**DISCOVER
YOUR
FUTURE!**

Overview of Kumamoto University



Where is Kumamoto?

Kumamoto is the capital city of Kumamoto Prefecture located in the middle of Kyushu Island in the southwest part of Japan.



History of the University

1874 Kumamoto Teachers College established

1885 Kumamoto Pharmaceutical College established

1887 The Fifth High School established

1896 Kumamoto Medical College established

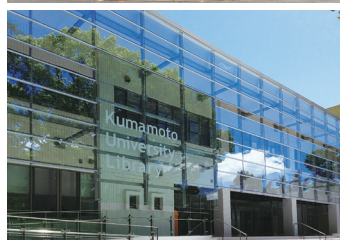
1897 Kumamoto Technical College established

1949 Kumamoto University established

Kumamoto University was established under the National School Establishment Law that reformed the preceding Japanese educational system. The new university incorporated the older institutions described above.

2004 Renamed as National University Corporation Kumamoto University

Since Kumamoto University became a National University Corporation in 2004, the university has been ushering in an era of change. Nevertheless, the university will still continue to strive for further advancements in education, research, and medical care based on the knowledge and experience it has gained since it was first established, in order to contribute to society in the 21st century.



Enrollment and Key Figures

(As of May 2019)	7 Faculties	7 Graduate Schools	Centers and Institutes
7,757 Undergraduate students 1,275 Master's students 663 Doctoral students 1,048 Faculty members 1,692 Administrative and Technical staff members	<ul style="list-style-type: none"> Letters Education Law Science Medicine Pharmacy Engineering 	<ul style="list-style-type: none"> Social and Cultural Sciences Science and Technology Medical Sciences Health Sciences Pharmaceutical Sciences Education Teacher Education 	<ul style="list-style-type: none"> Institute of Industrial Nanomaterials Center for Water Cycle, Marine Environment, and Disaster Management Magunesium Research Center International Research Organization for Advanced Science and Technology

Ideals and Goals

The Graduate School of Science and Technology endeavors to train the next generation of professionals who have logical reasoning abilities in addition to advanced expertise in their respective academic disciplines, who have the ability to use state-of-the-art knowledge and technologies to solve a wide range of problems with broad perspectives and creativity, and who can contribute to local societies and to the international community.

To this end, we have established a master's program based on our philosophy of a six-year program of consistent education beginning in undergraduate studies to provide students with a more advanced and specialized education founded on solid academic ability by field, and a doctorate program to provide students with an education through cutting-edge research initiated by students' own efforts.

We will also equip students with strong institutional and organizational networks in order to train them to become professionals with broad backgrounds who are able to cope with new frontiers and interdisciplinary fields.

In order to foster within students creativity and leadership abilities with broad and flexible perspectives, we will also strengthen collaborations with outside institutions conducting advanced research and contribute to the development of society.

Furthermore, by establishing a system for professionals to receive continuing education, enhancing the education and research environment for foreign exchange students, and accepting and training a diverse population of students, we will further our active role as a university open to society and to the world.

Organization Chart

Graduate School of Science and Technology

Department	Course / Education Program
Master's Course	
Science	Mathematics
	Physics
	Chemistry
	Earth and Environmental Sciences
	Biological Sciences
Civil and Environmental Engineering and Architecture	Civil and Environmental Engineering
	Urban and Regional Planning and Design
	Architecture and Building Engineering
Mechanical and Mathematical Engineering	Mechanical Engineering
	Mechanical Systems
	Applied Mathematics
Computer Science and Electrical Engineering	Electrical Engineering
	Electronic Engineering
	Computer Science
Materials Science and Applied Chemistry	Chemistry and Bioscience
	Chemistry and Materials
	Materials Science and Engineering
Doctoral Course	
Science	Mathematics
	Physics
	Chemistry
	Earth and Environmental Sciences
	Biological Sciences
Advanced Industrial Science	Environmental Conservation Engineering
	Environmental Management and Planning
	Architecture and Environment Planning
	Building Materials and Structures
	Advanced Mechanical Systems
	Intelligent Mechanical Systems
	Applied Mathematics
	Computer Science and Communication Engineering
	Frontier Technology for Energy and Devices
	Human and Environmental Informatics
	Applied Chemistry and Biochemistry
	Materials Science and Engineering

Admission Policy

Master's Course

To respond to the advanced knowledge, theories, and technology of applied fields that make up the foundation supporting our modern society, the next generation of science professionals must have solid and reliable academic abilities in each field as well as basic presentation abilities, the motivation to learn new things, a strong curiosity for discovering the truth and for creating new technologies, and the capacity to challenge themselves to learn new subjects with a high sense of purpose and to endeavor to solve problems.

Doctoral Course

This doctorate program seeks students who have an interest in the wide range of fields within natural science and an awareness as educated working professionals and international professionals; who have a strong, purpose-driven desire to explore deep truths and boldly face the challenge of creating new scientific technologies; and who wish to strengthen and perfect their flexible creativity and their ability to discover and solve new problems.

Message from the Dean

The Graduate School of Science and Technology as a wellspring of human resources who can boldly forge our future society

The Graduate School of Science and Technology (GSST) at Kumamoto University was created in 1988 through the integration of the Graduate School of Science and the Graduate School of Engineering. Following its reorganization in 1998, the school offered eight master' s programs and four doctoral programs. In 2010, with the establishment of a master' program at the Department of Mathematics, the school offered a total of nine master's programs and five doctoral programs in major subjects. In 2016, faculty members became affiliated with the newly established Faculty of Advanced Sciences and Technology. Subsequently, in 2018, the Graduate School of Science and Technology underwent a further restructuring process: master's programs were synchronized with undergraduate programs through their reorganization from nine to five majors. As a result, the school now offered six years of continual education from the undergraduate to the graduate level, providing distinct, specialized education programs for developing skills in logical thinking appropriate for each major subject. In addition, the doctoral program was reorganized into two major areas, enabling students to acquire advanced knowledge and skills in science and engineering and to develop their capacities to apply a panoramic perspective in building collaborative interdisciplinary projects.

The world is undergoing a period of unprecedented and disruptive change associated with its transformation into a knowledge-intensive society. While science and technology have contributed to enriching people's lives, it is also apparent that these benefits have not reached large numbers of people. Moreover, developments in science and technology have had undeniable social and environmental impacts through the creation of disparities within society and the destruction of natural environments that transcend national borders. Thus, a key challenge in the contemporary world is to apply a perspective that reflects a breadth of vision to develop innovative solutions to various social issues and create new value. For example, the use of artificial intelligence (AI) within many fields is an inevitable future societal trend. I believe that the capabilities of AI are likely to exceed those of humans within a short time span. However, to preserve human dignity, it will be necessary to develop and utilize "human-centered" AI. Designing this type of AI will require not only in-depth specialized knowledge but also a wide range of cultural skills and informed perspectives in areas such as ethics, philosophy, and history that will lead to a broad understanding of diverse societies, and foster a universal imagination. In addition, passion, enthusiasm, and a strong will to reach the end goal will be of paramount importance.

The high-quality educational environment in which students are immersed at GSST enables them to acquire advanced expertise and logical thinking skills within their respective disciplines. Moreover, this environment promotes cutting-edge research. To foster a perspective that transcends diverse values and specialties, and establish an international awareness, the Global Joint Education Center for Science and Technology (GJEC) has been established within the GSST, offering subjects within the liberal arts, management of technology (MOT) special education subjects, and subjects taught in English. These courses are aimed at equipping researchers and engineers with advanced skills so that they can contribute to solving global issues and driving creative innovations during these unpredictable times. We hope that the Kurokami South Campus will be a wellspring of human resources that can contribute to the creation of an equitable and prosperous future society.

Tsurekawa Sadahiro
Professor, Dr. Eng.
Dean, Graduate School of Science and Technology
Kumamoto University

Master's Course

Kumamoto University

Science

Education Goals

Students will not only contribute to the academic succession and development of human intellectual property in the fields of mathematics, physics, and chemistry, but also explore scientifically the truth behind the core of the many issues that our modern society faces, such as the phenomena of life, the global environment, and the energy problem.

To this end, our goal is to equip our students with the necessary knowledge, way of thinking, and philosophy common to sciences in order to train them to be able to contribute to the society internationally and widely, as highly ethical scientist specialists.

- ☐ Mathematics
- ☐ Physics
- ☐ Chemistry
- ☐ Earth and Environmental Sciences
- ☐ Biological Sciences



Babylonian number system

Civil and Environmental Engineering and Architecture

Education Goals

We will develop professionals who have advanced expertise in construction relating to social infrastructure development and who will work practically to create human-friendly architecture and urban spaces and to solve energy problems and problems of disaster prevention and mitigation

- ☐ Civil and Environmental Engineering
- ☐ Urban and Regional Planning and Design
- ☐ Architecture and Building Engineering



Compression test on concrete



Quality inspection of river water



An architectural model by student

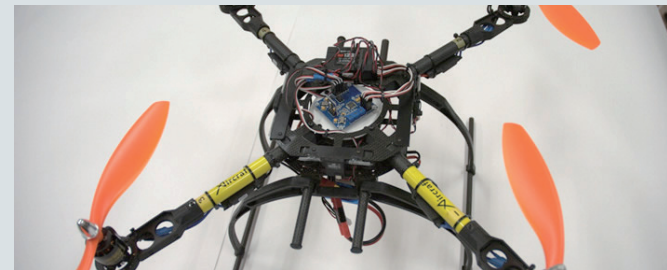
Mechanical and Mathematical Engineering

Education Goals

In this department, we aim to train students to become professionals who have advanced, specialized abilities and are capable of understanding mechanical systems under various environments from a comprehensive viewpoint that accounts for such factors as an increasingly complex society, the environment, and energy, or professionals who understand mathematical theories that legitimize various system designs and who can connect mathematical theory to real-life applications that are useful to society.

To this end, through fundamental and applied educational research on mechanical systems and mathematical theory, students will develop advanced expertise, an awareness of issues, and the ability to solve these issues.

- ☐ Mechanical Engineering
- ☐ Mechanical Systems
- ☐ Applied Mathematics



Multirotor helicopter testbed for autonomous flight systems

Computer Science and Electrical Engineering

Education Goals

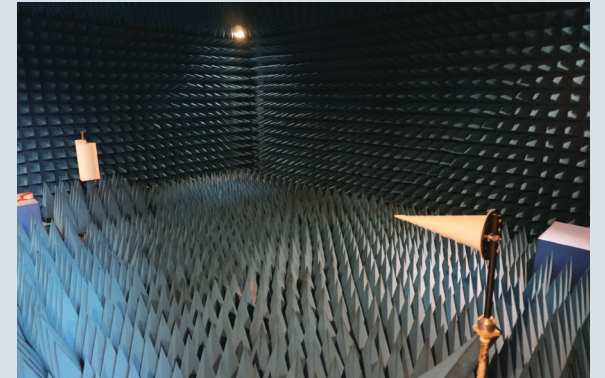
Computer science professionals who can contribute widely to the world of industry as driving forces for creating and advancing the foundations of local regions and the international community from a global perspective are in demand.

The fundamental technologies that support the computerization and electronicization of society are technologies relating to computer science and electronic engineering, and the training of highly specialized technicians and researchers who will be responsible for the development of these technologies is indispensable.

This department will train students to become highly specialized technicians and researchers with creative and flexible reasoning, like the following.

- 1) Those who can make full use of their advanced and specialized abilities to flexibly and quickly adapt to a diverse and dynamically changing society from a wide range of perspectives
- 2) Those who are equipped with creative abilities that allow them to solve problems by independently creating new technologies
- 3) Those who are motivated to become leaders in our society of advanced information and who feel that it is their mission to contribute to local regions and to the international community.

- ☐ Electrical Engineering
- ☐ Electronic Engineering
- ☐ Computer Science



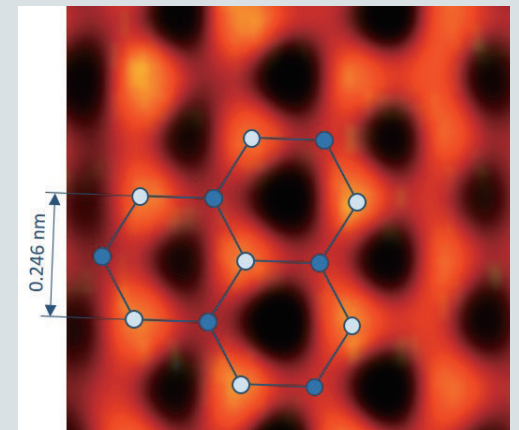
An anechoic chamber for electromagnetic wave

Materials Science and Applied Chemistry

Education Goals

This department aims to educate its students in materials engineering, material chemistry, and biochemistry. We combine high-level expert knowledge with technology in each of these areas, engaging with various problems with a holistic mindset, fostering the creativity, proactivity, and willingness to take on new challenges necessary to discover and resolve these problems. We aim to train students to become practitioners who will pioneer innovative materials in order to contribute to the sustainable development of the global community.

- ☐ Chemistry and Bioscience
- ☐ Chemistry and Materials
- ☐ Materials Science and Engineering



A scanning tunneling microscopic image of the surface of a highly oriented pyrolytic graphite measured in our student experiment program. Carbon atoms on A and B sites in the honeycomb lattice were clearly observed as bright (white circle) and dark (blue circle) spots, respectively.



Advanced Industrial Science

Education Goals

This department's educational goals are to equip students with advanced and cutting-edge expertise and logical reasoning abilities, to help students acquire an attitude for actively engaging in research activities, and to train students to be able to contribute to the international community and to local communities through proactive collaboration with researchers from different fields in Japan or overseas.

What We Offer

Through the doctorate program, students will gain an education that further deepens the knowledge, from fundamental to applied, of four specialized subjects that was built through the six-year program of consistent education from undergraduate engineering through the master's program. We have established 12 education programs in the doctorate program of the Department of Advanced Industrial Science so that students receive not only specialized expertise, but also broad perspectives and interdisciplinary knowledge of the engineering system as a whole, as well as the ability to work cooperatively with others. Therefore, we have put into practice an education through which students will proactively take courses provided as Integrated Science and Engineering Education courses in the Natural Science Education Department of the Graduate School in addition to gaining an advanced professional education through doctoral research in order to become so-called "T-shaped" human resources who can quickly and versatily respond to the demands of society in each field.

- ☐ Environmental Conservation Engineering
- ☐ Environmental Management and Planning
- ☐ Architecture and Environment Planning
- ☐ Building Materials and Structures
- ☐ Advanced Mechanical Systems
- ☐ Intelligent Mechanical Systems
- ☐ Applied Mathematics
- ☐ Computer Science and Communication Engineering
- ☐ Frontier Technology for Energy and Devices
- ☐ Human and Environmental Informatics
- ☐ Applied Chemistry and Biochemistry
- ☐ Materials Science and Engineering

Science

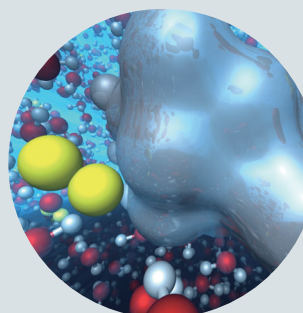
Education Goals

We aim to equip students with thorough expertise and insight in the natural sciences to educate them to become highly ethical professionals with broad perspectives who can independently advance their research internationally. After completing this doctorate program, our goal is for students to become practitioners able to create their own research agendas as self-reliant researchers and to apply their scientific expertise as practitioners pioneering cutting-edge research or as educators, government workers, or highly specialized company employees.

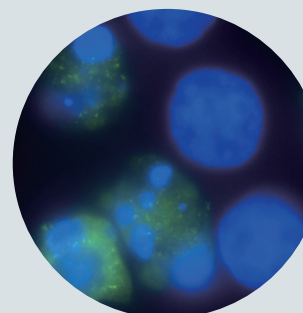
What We Offer

Our goal is to train students to become professionals who are able to use their advanced expertise in the field of science to contribute to academic development and social progress as world-class, self-reliant researchers. Therefore, through each course of specialized subjects, we not only provide up-to-date information, we also strongly emphasize students' engagement in individual research and preparation of their doctoral dissertations.

- ☐ Mathematics
- ☐ Physics
- ☐ Chemistry
- ☐ Earth and Environmental Sciences
- ☐ Biological Sciences



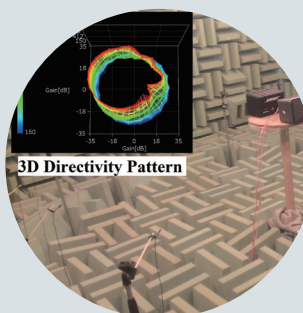
Hydrogen production from water with metal catalyst



Activated Caspase 3 in Apoptotic Cells (green) and Chromosomal DNA (blue)



Fractographic observation with a digital microscope



Directivity measurement system of a sound source equipped in the anechoic chamber

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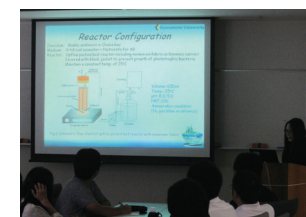
Global Joint Education Center for Science and Technology (GJEC)

Global Joint Education Center for Science and Technology (GJEC) offers three educational programs: "International Joint Education Program for Science and Technology (IJEP)", "Innovation Leadership Program" and "Aim-High Program" for cultivating qualities required for students to become leaders in our diverse global society.

International Joint Education Program for Science and Technology (IJEP)

IJEP serves as one of the key platforms for globalization of GSST by providing diverse learning environment. In this program lectures and research instructions are given in English, so that international students can complete their degree requirements without Japanese ability. The program is open for master's and doctoral courses of all departments in GSST. There are two IJEP required subjects, "Current Science and Technology in Japan" and "English for Science and Technology". Japanese students and international students in the regular program can also join IJEP.

For further information please visit our website at <https://www.fast.kumamoto-u.ac.jp/gsst-en/> or send email at ask-gsst@kumamoto-u.ac.jp



Final Presentation for IJEP Short-Term Exchange Program 2014



Innovation Leadership Program

Leaders in research and development and entrepreneurs should have management ability to identify the possibilities of technology and connect them to business opportunities to yield economical values for sustainable development, where the know-how of designing business models and product concepts and the management skills to attain project goals by utilizing diverse human resources play a central role. This program offers seven MOT Special Education subjects including lectures for fundamental theory of management, practical technology management, and practical training with presentation and debate. Lecturers are specialists in business administration and active managers in the front line of business management. ※Students who wish to take this program are required to have Japanese language ability.

Aim-High Program

This program offers two courses: The "Researcher Training Course" which aims to prepare doctoral students for active roles in universities and research institutes, and the "Industry Collaboration Course" which aims to prepare doctoral students to lead innovations in society. In the "Researcher Training Course", students will receive research training under the collaboration of chief supervisors and overseas researchers, and will study abroad for one year during their doctoral course. In the "Industry Collaboration Education Course", students will take part in joint research with Kumamoto University professors and corporate researchers, and will receive a specific curriculum designed through such joint research.

In addition to the three programs above, GJEC offers the subjects of "Advanced Science and Technology", "Advanced General Education" and "English Education". "Advanced Science and Technology" will be given by several instructors from various departments in GSST. "Advanced General Education" will be given by professors and lecturers invited from universities, institutes and companies in Japan and abroad. "English Education" aims to improve practical English skills for presentations at international conferences and writing papers for journals. These subjects allow students to gain broader knowledge across the fields of science and technology, and skills to apply it for society.

Services for International Students

Student Tuition And Fees

School Fees

(Unit: JPN Yen)

	Entrance Exam Fees	Admission Fees	Tuition Fees
Undergraduate students	17,000	282,000	535,800/year
Graduate students	30,000	282,000	535,800/year
Research students	9,800	84,600	29,700/month
Auditing students	9,800	28,200	14,800/credit

*Tuition paid in two installments in the 1st and 2nd semesters

*Research students' tuition for each semester is to be paid at the beginning of the semester ※Auditing students include non-degree course students

Average Monthly Living Expenses

■ Food 30,000 -45,000 yen

■ Accommodations

< International House > Single Rooms 17,000 yen
(incl. common service charge)

< Private apartments > 25,000 -60,000 yen

■ Total Average Monthly Living Expenses 80,000yen -

Financial Aid

Tuition Waiver (For Privately-Funded International Students)

You may be eligible to get all or half of your tuition fees waived, if your application is accepted. (Roughly 60% of the undergraduates, 80% of the master's course students, and 90% of the doctoral course students are exempted.)

Scholarships

A monthly scholarship of 30,000 yen to 150,000 yen is available from Japanese government, Kumamoto Pref., the Rotary Club, and other foundations.

*For details, please contact Academic/International Affairs Section of GSST.



Daily Life Support

Housing and Life

Kumamoto University International House, 10 minutes by bicycle (1.5 km) from the Kurokami Campus, is an accommodation for international students and researchers. Currently, it houses more than 200 people. Qualified residents can stay for 6 months after entering the university. There are apartments for students, supermarkets, convenience stores, and other shops near the university. The downtown area is located 10-15 minutes by bicycle from the university.

Campus Life

■ Facilities in Campus

The campus houses, cafeterias, restaurants, bookstores, travel agencies, and bank ATMs. Meals and commodities are readily available at reasonable prices.

■ Support for Japanese Language and Culture

Various levels of Japanese language classes are offered so that international students can choose one that matches their Japanese proficiency. The university also offers Japanese history and culture programs and field trips.

Tutor System

Kumamoto University offers a tutor system to support international students who have just come to Japan and do not speak Japanese very well or have limited knowledge about Japan. Usually, one graduate school student will be assigned to each international student.



International House Bldg. C



Cafeteria FORICO

Access Guide

Access Guide to Kumamoto

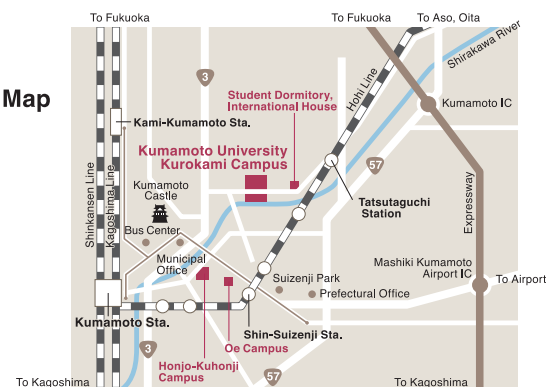
[To Kumamoto Airport by Air]
From Tokyo (Haneda) 100 min
From Osaka (Itami) 65 min

[To JR Kumamoto Station by Bullet Train]
From Tokyo 6 hrs
From Osaka 3 hrs
From Fukuoka (Hakata) 33 min

[From the airport]
To the Bus Center by limousine bus (50 min)
To the university by taxi (40 min)
From the Bus Center to "Kumamoto Daigaku Mae" by Sanko bus line

[From the station]
To the university by taxi (20 min)
To "Kumamoto Daigaku Mae" by Sanko bus line

Area Map



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Kumamoto University**

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