Extending the Frontiers of Engineering: Educating the Next Generation of Talented Engineers

This year Kyushu Institute of Technology (Kyutech) celebrates its 110th year anniversary. Kyutech was founded by Mr. Keiichiro Yasukawa, a noted businessman of the time. In 110 years since its foundation, Kyutech has produced over 60,000 talented engineers by practicing its founding principle of “instilling a deep knowledge of science and engineering in high caliber students.” Kyutech has been contributing to knowledge creation that will lead to academic progress, enhancement of competitiveness of industry, and regional development by making the most of its education and research capabilities.

Progress in science and technology in recent years is remarkable, filled with discoveries and inventions leading to the creation of innumerable technologies. These achievements have spread through society and become part of people’s lives at an accelerating pace, as you can see in the expansion of AI, IoT, and autonomous driving technologies.

In this context, Kyutech has been producing the engineers who provide solutions to the complicated challenges in the rapidly changing society. Kyutech focuses not only on the education of knowledge and skills, but also on the essential qualities for global engineers; acceptance of diverse cultures, communication skills, autonomous learning skills, problem setting and solving skills, and engineering design skills. In order to cultivate these qualities in students, Kyutech offers a variety of study programs and the best learning environment.

In addition, we believe university is a place for knowledge creation which unlocks the future. As knowledge creation, research activities have two aspects of value; one is for the development of academic studies and the other is for the development of society. Kyutech designated 10 research project centers in the field of environment and energy, space, LSI, networks, robots and others, and 5 strategic research units for inter-disciplinary and innovative researches. Kyutech also promotes international research collaborations with overseas universities by utilizing matching fund. Furthermore, Kyutech established “Joint Research Laboratory/Department” for long-term joint research with industries, and 8 Labs and 2 Departments has been opened.

Kyutech always seeks opportunities for information exchange, dialogue and collaboration with the public to introduce our various education and research activities, and will build up relationships and networks to enhance the quality of education and research. For the future society, Kyutech aims to build a campus which is open to the people for their learning and knowledge creation, on its 110 years of history as a cornerstone.

Mission and Vision

Kyushu Institute of Technology (Kyutech) was originally founded as a private institution called the Meiji College of Technology in 1907, and opened in 1909.

Mr. Keiichiro Yasukawa, the owner of a successful mining business, contributed a big amount of his private fortune to establish the College with the aspiration for strengthening Japan’s industry. His enthusiasm motivated Dr. Kenjiro Yamakawa who was the first physicist in Japan and the President of Tokyo Imperial University, to cooperate him by drawing the grand design of the College.

Dr. Yamakawa’s vision for the College has been succeeded by Kyutech today; educating gentlemen with excellent knowledge and skills in technology, which means developing engineers not only with technological expertise but also with uprightness and high moral sense. With this vision, Kyutech produced talented engineers who contribute to industrial development in Japan for more than 100 years of its history, and the vision continues to be our mission for the future.

Keiichiro Yasukawa (1849-1936) Dr. Kenjiro Yamakawa (1864-1931)
Kyutech at a Glance

Kyushu Institute of Technology (Kyutech) has 3 campuses and they are all located in Fukuoka prefecture, northern part of Kyushu island of Japan. Each campus has its characteristics and strong ties with the local area.

Tobata campus
- School of Engineering
- Graduate School of Engineering

Iizuka campus
- School of Computer Science and Systems Engineering
- Graduate School of Computer Science and Systems Engineering

Wakamatsu campus
- Graduate School of Life Science and Systems Engineering

3 Campuses
- 4,121 undergraduate students
- 1,209 master’s students
- 316 doctoral students

5,646 The number of students

341 International students from 42 countries and regions

480 190 Faculty members Administrative staff

As of May 2019
Strength and Achievements

Employability (as of March 2019)

- Undergraduate: 99.5%
- Graduate Student: 99.6%

All the departments of our undergraduate schools have been accredited by JABEE (Japan Accreditation Board for Engineering Education).

QS World University Rankings (2019)

- World University Rankings by Subject: No.401-450 (among 502 items) (Mechanical, Aeronautical & Manufacturing)
- Asia University Rankings: No.203 (among 499 items)
- Japan Rankings: No.31 (among 75 items)

Joint Research with industries

- Number of joint research projects: No.28 (228 projects as of March 2018)
- Revenue per researcher: No.12
- Revenue from joint research projects with overseas companies: No.25

Patent

- Patent Income per researcher: No.17
- Number of patents: No.17 (159 patents as of March 2018)

Venture Companies

- Number of Venture Companies from Kyutech research outcome: No.15 (42 companies as of 2018)

*From the survey by Ministry of Education, Culture, Sports, Science and Technology

*From the survey by Ministry of Economy, Trade and Industry

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Kyutech’s Student Project team Hibikino-Musashi@Home won the first prize two years in a row in the Domestic Standard Platform League (DSPL) of RoboCup 2017 and 2018. The team also won the first prize in Partner Robot Challenge (Real Space) in World Robot Summit 2018.

Team KUROSHIO, the allied team of 8 institutions including Kyutech, won the second place and 1 million US dollars in Shell Ocean Discovery XPRIZE, the international competition of autonomous ocean exploration technologies.

Kyutech has been recognized 2 years in a row as having the most launches of small satellites among academic institutions of the world. This recognition is from a report published by Bryce Space and Technology. Kyutech deployed 5 smallsats into orbit in 2018 and 4 will be launched in 2019, and it is expected that the smallsat launch tally will reach 18 by the end of 2019.

The BIRDS Project was awarded GEDC Airbus Diversity Award 2017 and received 10,000 US dollars. The project has implemented space engineering education for students from developing or emerging economies through designing, developing and operating CubeSats, and was recognized as a successful example of bringing diversity to engineering education.

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Student Project is Kyutech’s autonomous extracurricular activity of student groups, in which students propose and operate the projects which contribute to the university and local communities, such as participating in technical competitions and volunteer activities. The projects are financially supported by the university and also the alumni association and sponsoring companies. Through the projects, Kyutech aims to develop creative human resources who cultivated problem setting and solving capability, acquired communication skills and broad range of knowledge together with the basics of engineering, and are able to take leadership in industries and society.

**Hands on Education : Student Project**

**Vehicle**
- Autonomous car
- Formula racing
- Electric car

**Space**
- Cubesat, winged rocket, CanSat

**Robot**
- Home service/hot-picking/underwater/soccer/rescue/ET/micro/legged robot, quadcopter, robot contest produce

**Technologies for Society**
- ICT, application software, regional development project

**20 Projects in various fields for 2018**

**Strength and Achievements**

**Education and Research Organizations**

**Undergraduate School**
- Department of Mechanical and Control Engineering
- Department of Electrical and Electronic Engineering
- Department of Applied Chemistry
- Department of Materials Science and Engineering
- Career Center

**School of Engineering**
- Department of Civil Engineering and Architecture
- Department of Mechanical and Control Engineering
- Department of Space Systems Engineering
- Department of Electrical and Electronic Engineering
- Department of Applied Chemistry
- Department of Materials Science and Engineering
- Career Center

**School of Computer Science and Systems Engineering**
- Department of Artificial Intelligence
- Department of Computer Science and Networks
- Department of Intelligent and Control Systems
- Department of Physics and Information Technology
- Department of Bioscience and Bioinformatics
- Career Center

**Faculty**
- Department of Mechanical and Control Engineering
- Department of Civil Engineering and Architecture
- Department of Electrical and Electronic Engineering
- Department of Materials Science
- Department of Basic Sciences
- Department of Space Systems Engineering

**Faculty of Engineering**
- Department of Mechanical and Control Engineering
- Department of Civil Engineering and Architecture
- Department of Electrical and Electronic Engineering
- Department of Materials Science
- Department of Basic Sciences
- Department of Space Systems Engineering

**Graduate School**
- Department of Advanced Informatics
- Department of Interdisciplinary Informatics
- Department of Creative Informatics
- Department of Computer Science and Systems Engineering

**Graduate School of Computer Science and Systems Engineering**
- Department of Biological Functions Engineering
- Department of Human Intelligence Systems
- Department of Life Science and Systems Engineering
- Career Center

**Faculty of Computer Science and Systems Engineering**
- Department of Artificial Intelligence
- Department of Computer Science and Networks
- Department of Intelligent and Control Systems
- Department of Physics and Information Technology
- Department of Bioscience and Bioinformatics

**Institute of Liberal Arts**
- Department of Humanities and Social Sciences
- Department of Foreign Languages

**Education and Research Center**
- University Health Center
- Information Science Center
- Center for Microelectronic Systems
- Center for Instrumental Analysis
- Learning and Teaching Center
- Laboratory of Spacecraft Environment Interaction Engineering
- Advanced Mold and Die Technology Center
- Research Center for Bio-microsensing Technology
- Eco-Town Collaborative R&D Center for the Environment and Recycling
- Frontier Research Academy for Young Researchers
- Biomedical Informatics R&D Center
- Next Generation Power Electronics Research Center
- Center for Socio-Robotic Synthesis
- Dependable Integrated Systems Research Center
- IoT System Platform Research Center
- Research Center for Solar Light Energy Conversion
- Molecular Engineering Institute

*Consisted of educational organization for students and research organization (faculty).*
School of Engineering

Department of Civil Engineering and Architecture

Future urban design for solid, beautiful and enriched city

The department consists of two courses. In Architecture Course, students learn how to create functional and beautiful architecture and urban space design. In Civil Engineering Course, students acquire the knowledge and the skills to create safe and enriched city and community environment.

- Architecture Course
- Civil Engineering Course

Department of Mechanical and Control Engineering

Create future machines with high controllability

The department consists of two courses: Mechanical Engineering Course to produce and operate machines which enrich our lives by elucidating natural phenomena, and Control Engineering Course to enable intelligent smooth movement of machines by combining technologies of measuring, controlling and information devices.

- Control Engineering Course
- Mechanical Engineering Course

Department of Electrical and Electronic Engineering

Electrical and electronic systems to support infrastructure of society and industry

Electrical and electronic engineering is essential to every modern industry and social life with the broad range of related fields such as electrical energy, electric device, electronic circuit, and electronic systems. The department aims to develop engineers with expertise in these various fields who enrich the society.

- Electrical Engineering Course
- Electronic Engineering Course

Department of Applied Chemistry

Explore the world at atomic and molecular scale

Research and development in applied chemistry is to create new substances with various properties and apply them to useful materials, aiming at industrial productions. In this department, students learn basics of chemistry which sustain industrial production and manufacturing, and then acquire the knowledge and skills for application.

- Applied Chemistry Course

Department of Materials Science and Engineering

Pursue materials as a bedrock of science and technology

Materials science and engineering aims to design, create and provide various materials needed for human activities. By learning materials science and engineering and developing innovative materials, we can realize manufacturing things which have never been imagined and accelerate the development of science and technology in every field.

- Materials Science and Engineering Course

Graduate School of Engineering

- Master’s Program
  Department of Engineering

- Doctoral Program
  Department of Engineering

International Course

Space Engineering International Course

Space Engineering International Course (SEIC) is designed for aspiring students and engineers with passion for space and satellites, aiming at nurturing both Japanese and international students into global engineers with cross-cultural competency and skills in space engineering. In SEIC, you will engage in project-based learning in interdisciplinary, multicultural teams with access to top-notch research laboratories and satellite development and testing centers which is very unique to Kyutech. And you will gain the skills necessary to carry out the full cycle of satellite design, test, operation, systems engineering, and project management.

- International Material Course (Department of Materials Science)

Department of Materials Science is one of the graduate courses of Graduate School of Engineering and is open for international students as International Material Course. The department covers the design and synthesis of new substances and materials having new functions, analysis of material/substance structures and properties, and elucidation of their functional expression mechanisms. It also works on development of systems using value-added substances, and development of production processes that cater to the needs of high-tech industries. For international students, all the lectures are provided in English.
The department aims at realizing innovative systems as an interface between humans and the future to provide solutions for various social issues. In the three courses offered by the department, students learn how to design and develop advanced systems for robot, intelligent car, medical micro machine, ultra-precision micro machining and micro measurement, 3D printing, etc. which is constructed by the fusion of information, visual, control, and machine technology.

**Department of Artificial Intelligence**

New Information technology for human-computer collaboration

The department aims to develop engineers who establish new information technologies, with which computers think and act like humans through media such as words, sounds and visuals and yield new things humans never imagined, for “human-computer collaboration”.

- Data Science Course
- Artificial Intelligence Course
- Media Informatics Course

**Department of Computer Science and Networks**

Realize next-generation smart society with computer and communication technology

Utilization of high-level information and communication technology (ICT) for mutual collaboration among people and things through information is essential to modern society. To support the realization of a next-generation smart society, the department develops talents with the knowledge of computer hardware and software technology and ICT.

- Software Design Course
- Network Engineering Course
- Computer Engineering Course

**Department of Bioscience and Bioinformatics**

Research on life as superb information systems

The department aims to foster talented engineers who establish new industrial fields related to human life, by combining wide range of biotechnological fields such as medicine, pharmacy, food and beverages, chemicals, environment, and biomaterials with the knowledge and technologies of computer science.

- Biomolecular Engineering Course
- Biomedical Informatics Course

**Department of Intelligent and Control Systems**

Intelligent systems as an interface between humans and the future

The department aims at realizing innovative systems as an interface between humans and the future to provide solutions for various social issues. In the three courses offered by the department, students learn how to design and develop advanced systems for robot, intelligent car, medical micro machine, ultra-precision micro machining and micro measurement, 3D printing, etc. which is constructed by the fusion of information, visual, control and machine technology.

- Robotics Course
- Systems and Control Course
- Mechanical Science and Technology Course

**Department of Physics and Information Technology**

Learn from nature for various fields of innovative technologies

The department is developing engineers who are able to break new ground in interdisciplinary research area to yield various innovative technologies, through education and research in physics to search universal laws of nature, in biology to search universal laws of life, and in computer science as information and systems engineering technology.

- Physics and Electronics Course
- Biophysics Course

**International Course**

LSI and Applied Computing Course

LSI and Applied Computing Course is an international course in Graduate School of Computer Science and Systems Engineering. This course, which consists of two practical modules, covers the key technologies of system and LSI design including applied computing. The LSI design module provides knowledge of design for integrated circuits and dependable systems. The applied computing and system design module provides applications of computing methods with advanced systems and the methodology of system design.

**Graduate School of Computer Science and Systems Engineering**

- Master’s Program
  - Department of Advanced Informatics
  - Department of Interdisciplinary Informatics
  - Department of Creative Informatics

- Doctoral Program
  - Department of Computer Science and Systems Engineering

**Iizuka MILAiS**

Learning AGORA
The research and education in this department focuses on engineeringly reproducing and utilizing the structures and the functions of material and energy conversion which nature and living organisms have. And in this department, researchers in material and bioscience fields collaborate mainly in the research subjects of environment and energy, and aim to contribute to the solution for social issues such as global environment and human health.

- Division of Green Electronics
- Division of Biological Mechanics
- Division of Environmentally Conscious Chemistry and Bioengineering
- Division of Physiological and Biochemical Adaptation
- Division of Green Technology

The department aims to engineeringly reproduce the functional principles of human intelligence into intelligent systems and intelligent information processing, and contribute to industry and provide solutions to social issues. The research and education in this department covers advanced development of mechanical systems and devices, such as intelligent autonomous robots, intelligent information system development and artificial intelligence algorithms designs that incorporate the principles of human reasoning, and scientific analysis of social activities and human intelligence by using mathematical modeling, brain science and cognitive science.

- Division of Human Intelligence and Machines
- Division of Intelligence Systems and Emergent Design
- Division of Human Interaction and Brain Functions
- Division of Human Behavioral Sciences
- Division of Human Technology

In this course, the two departments of the master’s course are integrated into one department. The course provides cross-disciplinary and global oriented education and research to develop human resources as follows.

- Engineers and researchers with capability and understanding to elucidate the superior structures and functions of living organisms for resource and energy saving, environmental adaptation and affinity for humans and realize this for the technological applications
- Human resources who can play a dominant role as global leader by offering solutions to various issues confronting the modern society and contribute to the sustainable harmony of the society with nature
- Professionals with the capability to monitor the latest trends in research and technology continuously and strive to produce innovative research results

AAR is the abbreviation of Advanced Assistive Robotics, and Global AAR Course is focused on advanced robotics emphasizing the aspect of assistive technology. In this course, you will acquire knowledge and skills for design and implementation of intelligent systems that provides solutions to industry and medical welfare, in multidisciplinary subjects such as integrated circuits, control, sensing, nanosystems, computer systems, machine learning, cognitive/behavioral science, neuroscience, and brain-computer interface. You will learn and conduct research through collaborative work with Japanese students.
Kyutech has been strengthening its research seeds in the fields of environmental engineering, aerospace engineering, highly dependable integrated systems, information and communication network, robotics, and so on.

To cultivate and grow the seeds into technologies which contribute to society, Kyutech established a unique research promotion system: Strategic Research Unit, Research Project Center, and Strategic Research Project Center.

**Kyutech’s Major Research Areas**

**Aerospace**
- Satellites for discharge experiment
- Environmental testing of small satellites
- Research on super high-speed collision
- Reusable space flight system

**IoT/Robotics**
- Autonomous/safe driving support using AI
- Primary industry robot system
- Contactless biosensor
- Brain-like computer

**Energy & Environment**
- Next generation power electronics
- Printable cylindrical solar cell
- Conversion of air and water into resource and energy under normal temperature and pressure
- High functional photocatalyst by controlling reaction site
- Materials and systems for high-temperature superconductivity

**Fusion of Medicine, Dentistry & Engineering**
- Electrical and chemical biodiagnostics
- Design and development of medicine by computer support
- Autonomous robotic capsule endoscope
- Medical and nursing diagnosis using image processing
- Optimization of medical and nursing care by sensor-based activity recognition and big data processing

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**Research Project Centers** are the research centers in which Kyutech researchers from the different schools and departments collaborate in order to tackle with global, national and regional issues.

**Advanced Mold and Die Technology Center**
The center is engaged in die and mold engineer education for students and workers in cooperation with industry, and contributes to local die and mold industries by conducting research and development of new technology based on Industry-academia-government collaboration.

**Eco-Town Collaborative R&D Center for the Environment and Recycling**
The center is mainly aiming at effective utilization of urban and/or rural waste biomass and realization of advanced recycling society. It is engaged in public demonstration and introduction of the technology newly developed by Kyutech and its collaborative partners, in order to diffuse and adopt the technology in the society.

**Biomedical Informatics R&D Center**
The center aims to build a highest level education and research base of biomedical informatics in the world, and also the base of medical-engineering and industry-academia-government collaboration, by active research and development based on computer science and systems engineering. It also contributes to human health and welfare by medical innovation and educating global engineers as innovators.

**Dependable Integrated Systems Research Center**
The mission of the center is to create highly reliable and high-quality next generation integrated systems through the research on basic and applied technology, and to realize the safe and secure information society. And it contributes to strengthen academic and industrial competitiveness by developing advanced technology such as VLSI, wireless system and memory devices, networking for international research collaboration etc.
Strategic Research Project Centers are promoting advanced research and strengthening research capability with the financial support by the university in order to form an international research base utilizing networks with overseas research institutions.

**Laboratory of Spacecraft Environment Interaction Engineering**

Space systems such as satellites must endure the harsh space environment made of radiation, space plasma, ultraviolet rays, atomic oxygen, vacuum, etc. This laboratory carries out the R & D of endurance technology for such environments. The laboratory establishes suitable systems engineering practices. Its target is not only traditional satellites requiring high reliability in space with high-cost and long development time; it also targets satellites that deliver value to the customers/users with low-cost and with speed. This is the category of “lean” (small) satellites.

**Research Center for Bio-microsensing Technology**

Bio-microsensing technology is to measure various biological materials which indicate health conditions. The center develops fundamental technology and instruments as a tool for self-management of health. The center also promotes the Dentistry-Engineering Cooperative Education with Kyushu Dental University and it produced variety of cooperative fruits such as an oral cancer diagnosis or periodontal disease testing system.

**Next Generation Power Electronics Research Center**

The center promotes research on upcoming power electronics technologies and power semiconductor devices, that contributes to the energy conservation and the realization of a low-carbon society. It also contributes to educational and technology development initiatives such as doctoral-level engineer development through project base learning, creating intellectual property, and promoting research collaboration with relevant institutions and industries. The center promotes open-innovation-base collaboration scheme called “Open Labo.” with many industries.

**Center for Socio-Robotic Synthesis**

The main aim of the center is social implementation of robot technologies including AI (machine learning, neural networks, etc.), control and navigation, image processing, and so on. The center has been working on field robots such as underwater robots, agricultural robots, forest robots, welfare robots, FA robot in industry. To attract attention of young researchers, the center organizes Tomato-Harvesting Competition, Forest Drone and Robot Competition, Underwater Robot Festival every year. The center also supports the students’ activities to join robot competitions like RoboCup, RoboSub, etc.

**Research Center for Solar Light Energy Conversion**

The center was established with the purpose of the research and the development of materials and devices which convert solar energy into electric and chemical energy. In addition, to construct the system which stores solar energy as high-energy materials and convert it into electric energy accordingly, we aim to develop the fuel cell which converts hydrogen into electric energy.

**IoT System Platform Research Center**

The center is mainly conducting the research of fundamental technology for IoT system platform. Aiming to provide feasible solutions and applications, it proceeds the research by combining technologies from Kyutech’s 6 technical domains; sensor device, processor (low electricity consumption), software (algorithm), communication protocol, electric power source and circuit, and antenna (EMC).
03 Strategic Research Unit

Aiming at strengthening research capabilities for a long term, Kyutech established Strategic Research Units. The Units form an inter-disciplinary new research domain and realize innovative research activities, and foster young talented researchers who will lead the next generation.

Unit for material design for further improvement of transition temperature of high-temperature superconductors
headed by Prof. Masaki Mito

Based on multiple pioneering and characteristic research-seeds related to superconductors, this unit tackles with the improvement of transition temperature of superconductors, one of the tough questions of physics, by promoting some projects such as improvement of functions of high-temperature superconductors, improvement of physical measurement techniques, and designing-and-synthesizing new superconductors.

Research Topics
- Synthesis and evaluation of bulk materials and thin films for high-temperature superconductors
- Synthesis of novel superconducting materials
- Evaluation of physical properties of high-temperature superconductors at high pressure
- Precise electrical resistance measurement of high-temperature superconductors
- First-principles calculation for high-temperature superconductors
- Basic theory to elucidate mechanisms of superconductivity

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Young researchers unit for the development of a future-creation environmental and bio-appropriate technology by utilizing Kyutech international research bases
headed by Assoc. Prof. Toshinari Maeda

By utilizing Kyutech’s MSSC (educational research and development site in Malaysia), this unit collaborates with Universiti Putra Malaysia and other research institutions, and develops appropriate technologies to be implemented in society in the field of biological engineering, environmental biotechnology, and biomaterial. In particular, the unit aims at R&D of technologies which contribute to the field of environment and energy, and healthcare, and its mission is to realize an ultra low-carbon society and healthy longevity society.

Unit for innovative multiscale materials
headed by Prof. Teruyuki Nakato

This unit aims to create innovative material systems for photoenergy conversion and materials transformation with the concept of multiscale chemistry. The unit tackles on realizing novel materials with innovative functions such as optimizing performance by adapting to external conditions, or producing multiple substances on demand by designing the dynamic hierarchical structures of multiple elements gathered in diverse scales from molecular to macro, and creating functions by the communication between elements.

Research unit for Resilient Edge Cloud Designed Network (RECN)
headed by Assoc. Prof. Kazuya Tsukamoto

Based on the academic exchange agreement between Kyutech and the City College of New York, the unit establishes the fundamental technologies of resilient edge cloud designed network to realize highly trustworthy IoT/CPS. The unit conducts R&D, with the “real-world” evaluation, of algorithms and information systems which help people for their behavior modification, and support workers for their optimal process management.

To realize optimal preventive medicine and nursing care which values quality of life and individuals dignity under limited human resources, the unit aims at creation of smart life care society which gathers the best use out of ICT, IoT, and robotics. The unit conducts R&D, with the “real-world” evaluation, of algorithms and information systems which help people for their behavior modification, and support workers for their optimal process management.
In April 2019, Kyutech has newly established Molecular Engineering Institute on its Tobata campus. The institute, with Prof. Mitsuru Kitamura as the Director and Distinguished Professor Takeshi Endo as the research manager, aims at the creation of novel materials based on molecular design. Two Joint Research Departments have been established in the institute for the industrial-academic collaborations with companies. The institute will develop functional materials which meet the needs of society, expand new research domains by collaborating with researchers of other Kyutech departments, and foster young researchers.

**International collaboration**

**Joint Research Program**

Kyutech started Joint Research Program to promote joint research with its international partners aiming at promoting and fostering the international joint research works to achieve high impact academic results and acquiring research grants. In this program, Kyutech and the partner university recruit and select joint research teams respectively, and provide them with financial support.

**Example of Research Themes in Joint Research Laboratory/Department**

- High quality power semiconductor wafer evaluation method
- IoT research development
- Biomaterial and health supplementary foods using elastin
- Lean Automation
- Plant life-cycle engineering
- Industrial robotics
- Green Environment Material
- IoT for production preparation
- Functional materials

**Joint Research Laboratory and Joint Research Department** are research organizations funded by companies and industries, and they are established “in Kyutech”, like a company’s research lab in the university. Companies provide not only funds but also their researchers, and Kyutech provides its researchers and research facilities. The researchers from the company and Kyutech conduct research together, and research results and intellectual properties will be jointly owned by both institutions.

**Universiti Putra Malaysia** (Malaysia)

- Universiti Putra Malaysia and Kyutech signed an LOI to promote joint research projects on 14th of March, 2017
- Projects started from September 2017
- 3 projects started in 2017, and 2 projects in 2018

**National Taiwan University of Science and Technology** (Taiwan)

- National Taiwan University of Science and Technology and Kyutech signed an agreement to promote joint research projects on 12th of April, 2017
- Projects started from August 2017
- 5 projects started in 2017, and 6 projects in 2018

**Universiti Teknologi PETRONAS** (Malaysia)

- Universiti Teknologi PETRONAS and Kyutech agreed to join in the program and the agreement will be signed soon
- The program will start in October 2019

**International research network**

**Postdoctoral Fellowship at Kyutech**

Aiming at developing on-going researches at Kyutech and promoting joint research with leading laboratories overseas, Kyutech employs young promising researchers as postdoctoral research fellows. Kyutech welcomes the excellent researchers with a doctoral degree, and they are expected to accelerate interactions of research and society, in the research project aiming to establish an international research base to solve global issues, or in the research unit and team which will lead the next generation.

**Newly established Molecular Engineering Institute to connect research seeds to industrial needs**

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Our education to produce global engineers

Global Competency for Engineers
Aiming at producing global engineers who play active roles in the globalized society, Kyutech defines the ability and the elements required for such engineers as “GCE” (Global Competency for Engineers), and develops and promotes the educational package to nurture GCE.

3Cs : 3 main features of GCE educational package

Competency: Design GCE elements and achievement levels as objectives, and establish the evaluation scheme

Circuit Program: Develop the Circuit Program to acquire GCE and design the system for effective operation of the Program

Learning Complex: Develop the complex learning environments for effective education and learning of GCE, such as:
- Lecture room and atelier for active learning
- Overseas campus and office
- Dormitory for communal living of Japanese and international students, guest house

GCE

Global Liberal Arts

Language Education

3 Global Competency for Engineers

01 Step 1 Initial learning
- First guidance
- Self Awareness
- Adequacy test
- Pre-questionnaire

02 Step 2 Introduction
- Globalisation at Kyutech
- Aims and objectives of GCE
- Problem setting and solving skills

03 Step 3 Safety measures
- GCE education
- Risk Management & Safety Measures

04 Step 4 Follow-up learning
- Assessment of Learning Outcomes
- Survey for learning outcomes
- Follow-up questionnaire

05 Step 5 Achievement report
- Report on Learning Accomplishments

06 Step 6

Circuit Program Development and system design of educational programs

Kyutech provides students with various educational programs to help them acquire GCE. The outbound student mobility programs are conducted effectively in one educational package with the flow from initial learning before going abroad to follow-up evaluation. Students are expected to acquire higher level of GCE through experience of several programs and continuous learning as if they train themselves in circuit training.

Learning Complex Development of the complex learning environments

Kyutech develops various learning environments (complex learning environments) to nurture autonomous learning attitude of students and to implement effective GCE education. By developing “X on Campus”, learning environment on campus, and “Campus on X”, campuses outside Kyutech, it supports diverse learning styles.

X on Campus
- Lecture rooms for active learning
- Design Workshop for engineering design
- Lounges for international exchange
- Commons for autonomous learning

Campus on X
- MBSC on UPM (Universiti Putra Malaysia)
- Satellite office on KMU/THB(King Mongkut’s University of Technology North Bangkok)
- Also see page 27

The number of students who joined outbound mobility programs (As of March 2019)

For effective acquisition of the 5 elements, Kyutech promotes following 5 methods for GCE education, on the basis of liberal arts courses and the improvement of language education.

01 Acceptance of diverse cultures
02 Communication skills
03 Global Liberal Arts
04 Language Education
05 Collaboration Work with International Students

Globalization at Kyutech
Overseas Offices

**MSSC (Malaysia Super Satellite Campus)**

Kyutech operates MSSC on the campus of Universiti Putra Malaysia as the very first overseas satellite campus for education and research established by Japanese national university. MSSC works as a hub for Kyutech’s projects for global engineer education, international joint research, and faculty and staff development in Malaysia.

☑️ **4 missions of MSSC**

1. Global education for students
   - Student study abroad program
   - Work abroad internship program in Malaysia
   - Dual degree program with UPM (Doctoral courses)
2. Recruiting talented foreign students
3. Accelerating international research activities
   - Joint research with UPM
   - Annual international symposium with UPM
4. Faculty and staff development for globalization

**Kyutech-KMUTNB Collaboration Satellite Office**

In March of 2019, Kyutech and King Mongkut’s University of Technology North Bangkok (KMUTNB) signed the agreement to establish Kyutech-KMUTNB Collaboration Satellite Office on the campus of KMUTNB. By utilizing the office, Kyutech aims to promote; education and research collaborations such as student exchange, double-degree program, visiting lecture/seminar exchange, and joint research; alumni networking and collaborations; exchange of information on research and education funds.
Our Partners (as of June 2019)

- Number of Partner Institutions: 146 (35 countries and regions)
- Number of Double Degree Program partners: 12