

[2016]九州大学博士課程リーディングプログラムグリーンアジア国際戦略プログラム

<https://hdl.handle.net/2324/1904348>

出版情報：九州大学博士課程リーディングプログラムグリーンアジア国際戦略プログラムパンフレット.
2016, pp. 1-, 2016. 九州大学グリーンアジア国際リーダー教育センター事務局
バージョン：
権利関係：



Kyushu University Program for Leading Graduate Schools
Advanced Graduate Program in
Global Strategy for **Green Asia**



Kyushu University Program for Leading Graduate Schools
Advanced Graduate Program in
Global Strategy for **Green Asia**

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August 2016





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Kyushu University

The “Advanced Graduate Program in Global Strategy for Green Asia” is a new combined Masters/Ph.D. program. The purpose of the “Green Asia” program is to incubate leaders who can take on the challenges of balancing greening and economic development in the Asia region.

The entire world faces an inevitable demand of achieving sustainable economic growth while preventing mass consumption of fossil resources. With the ever-widening gap between rich and poor compounded by globalization, the rapid rise of energy consumption in Asia, and the fossil resources price hike, effective strategy and action is required to tackle the emerging environmental and resource issues.

Asia is a melting pot of diverse social and cultural structures, and it is also a vigorous region with fast paced economic development. Japan, as part of the Greater Asia community, needs to work with other nations and act upon to develop a global model which distinguishes from the Western-centric model to realize a Green Asia. Therefore, the training and formation of a global network of leaders is an indispensable part of this program. In addition, our program offers the first-rate education available, and trains individuals who have global vision to work across a wide spectrum of platforms in industrial, academia, and politics. We will execute our unique educational plan in Asia, and then extend our mission to be applied worldwide. With this approach, we are supporting a radical reformation of graduate school system in Japan, and promoting the formation of a future-oriented renowned educational institution in the world.



Program Coordinator
Jun Tanimoto

Professor
Department of Energy and Environmental Engineering
Interdisciplinary Graduate School of Engineering Sciences
Kyushu University

In order for Japan to become the world leader in science and technology, it is extremely favorable to construct a developing society that utilizes its strong leading edge industrial base and green technology in the international community, especially the Asian sphere, the Middle East and the Oceania region.

Asia is currently undergoing rapid economic development, as well as fast resources exhaustion and environmental pollution. However, these issues involve economic development, political system, history, culture, and other characters that are strongly bonded in each nation. Therefore, we need a momentum from leading edge science and technology with continuous innovation to develop a global society that can work beyond national boundary.

“Green Asia” is a phenomenal idea to ensure the coexistence of economic expansion and “greenification” (saving resources and environmental conservation). It is also an icon of understanding and cooperation among individuals who care about our environment and willing to contribute with extended knowledge in science. With the mission of “Green Asia” we have built a unique program. Graduate students who are in one of the three specialized majors: material science, system engineering, and resource engineering, will also study in the subjects of environmental science and basic sociology and economics. In addition, with the practical experience inside and outside Japan students can acquire the five abilities (research, practice, global perspective, system landscape and leadership) at the end of the program. As a result of the leadership development program individuals will map a human resource network in Asia.

The three departments at the Interdisciplinary Graduate School of Engineering Sciences (IGSES) and the Department of Earth Resources Engineering of Kyushu University, which are the pillars of this program, have been accepting students from a wide array of educational and cultural backgrounds to promote global education in graduate studies. Our university emphasizes the

educational innovation of graduate schools to develop human resources for the global field through the GP program (2005-2006: IGSES), the Global COE program, Novel Carbon Resource Sciences (2008-2012: IGSES), Project Campus Asia (2011-2015: IGSES), and Support for the Formation of Collaboration Programs with ASEAN Universities (2012-2016: Faculty of Engineering) in recent years.

Program features

- 1) Development of the Education Systems: Accepting a wide range of domestic and international students, providing interdisciplinary graduate education, as well as promoting graduate school reform.
- 2) Curriculum: In addition to the science and engineering curriculum (including international and industrial internships, international exercise), humanities and other social science subjects are included in the curriculum (Green Asia research paper).
- 3) Mentoring Care Unit (MCU): Introducing an evolutionary guidance care unit.
- 4) Asia Collaboration Network & Government - Industry - Academia Partnerships: Bridging with over 30 research institutes in Asia, and working with 58 organizations locally in Japan. Constructing a framework of the Green Asia Industrial Theory through humanities and sciences.
- 5) Education Quality Assurance and External Assessment: Preparing an educational results and guidance portfolio by students.
- 6) Added-value Oriented Green Engineering: Training individual to have the abilities of upstream thinking, problem identification / analysis, and expansion / integration to accomplish the goal of “Green Asia.”
- 7) Establishment of the Center for the Advanced Graduate Program in Global Strategy for a Green Asia

The following training principles are the five necessary abilities for leaders in the fields of science and technology: research (creativity), practical (strategic thinking, collaborative and management skills), global perspective, system landscape and leadership.

• Research: Students are advised to take general education courses (environmental studies / energy & resources) at introductory level, and subsequently, leads to in-depth specialized subjects of students’ interests. In order to broaden knowledge in the specialized subjects, students are assigned to attend seminars of other research groups for a year. In addition, students are required to give an interim presentation including research progress and attended seminars in the second semester of the first year. Students are also required to defend their master’s

theses at the end of the second year, present the doctoral theses progress at the end of the fourth year.

- Practical: Based on the understanding of the Intellectual Property Theory and the Practical Theory from industrial researchers and technical experts (Intensive course), students are required to gain corporate internship experience in Japan from two ~ three weeks up to two months.
- Global Perspective: Lecturers are invited to hold debates (forums) allowing students to discuss problems and potential solutions on a given subject. Forums are held collaboratively with universities overseas every six months on a specific theme. Students are also required to intern at a partnered overseas university (2 months) and corporation (2 months).
- System Landscape: Economics, politics, philosophy, Asian cultures & international relations, and theory for corporate leadership related to the subject of environmental studies / energy & resources are required to shape a global leader. In addition, students are invited to domestic and overseas collaborating institutions (1 week) to observe the current affairs, and held seminars and debates to discuss those issues.

Our quality guarantee of the program

- Qualifying Exam: Evaluate basic knowledge and research ability upon program entrance.
- Accumulation Test: In the first half of the course, students are required to pass exams based on the course content given in three consecutive months. In the second half, students are to be evaluated on specialized knowledge given each month. Obtaining passing score is needed to fulfill degree requirement.
- Program Report: Students are asked to submit a report on the instruction they received in the program and attend an interview.
- Interim Presentation: Students are required to write an interim report and give an oral presentation on their doctoral thesis (one year prior to graduation).
- Degree Examination: Accumulation Test is given one year prior to acquisition of degree. The result of the course report and the abstract of doctoral thesis are assessed externally for degree evaluation. Lastly, completion and submission of doctoral thesis, public hearing (defense), and assessment are required for obtaining the Doctoral Degree of Engineering Sciences.

Education is our mission. We would like to invite you to witness how our program can shape individuals to take on the challenge of creating a true Green Asia.



Program for Leading Graduate Schools

The Program for Leading Graduate Schools seeks to recruit talented individuals with traits of creativity and foresight who can play an active role in government, industry, and academia on a global scale. Our program offers a first-rate education, and trains students to work across a wide spectrum of platforms. With this approach, we are supporting a radical reformation of the graduate school system in Japan, and promoting the formation of a future-oriented renowned educational institution.

Kyushu University Interdisciplinary Graduate School of Engineering Sciences (IGSES) and the Department of Earth Resources Engineering, Graduate School of Engineering, have teamed up to build a unique curriculum for this particular program. Graduate students who are engaged in one of the three specialized research fields: materials science, system engineering, and resources engineering, will also study environmental science, basic sociology and economics. In addition, with the knowledge and practical experience gained domestically and overseas students will be able to attain the five key competencies of research, practical understanding, global perspective, objective appraisal, and leadership, to build a human resource network in Asia, and to receive a doctoral degree with from the "Advanced Graduate Program in Global Strategy for Green Asia" at the end of their studies.

Energy Innovation from Asia to the World Leadership Program in Science and Technology

Our educational program aims at developing leadership in science and engineering to realize a balanced greening and economic growth in Asia. The entire world faces the challenge of maintaining positive economic growth, while drastically reducing resource consumption. Asia encompasses a large cultural and social diversity, and it is a typical melting pot model of an area with complex economic and environmental problems.

An effective strategy was never implemented for countries to accomplish sustainable economic growth while dealing with environmental and resource restrictions related to mass consumption of fossil fuels. In this century, the role of our country is to develop a global model, which distinguishes from the existing Western-centric model to realize a Green Asia. Negative influences from globalization have emerged, such as the ever-widening gap between the rich and poor, rapid energy consumption in Asia and fossil resources price hike. The Global Strategy for Green Asia is a flexible approach based on social, industrial, and economic factors that are derived from Asian and Oceanic history and culture. Such an approach with a strong global network may generate a synergistic effect between greening and growth.

Asia encompasses a large cultural and social diversity, and it is a typical melting pot model of an area with complex economic and environmental problems.

- Expanding Economy
- Attractive Market
- Fossil Resource Dependence Society
- Environmental Preservation
- Cultural and Historical Diversity

《Green Asia》 Economic Growth and Resource Preservation in Asia

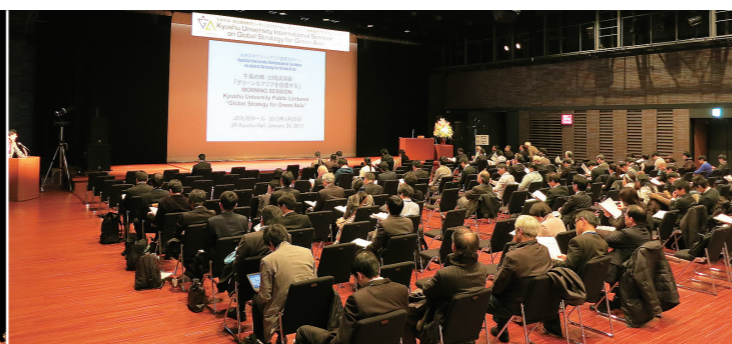
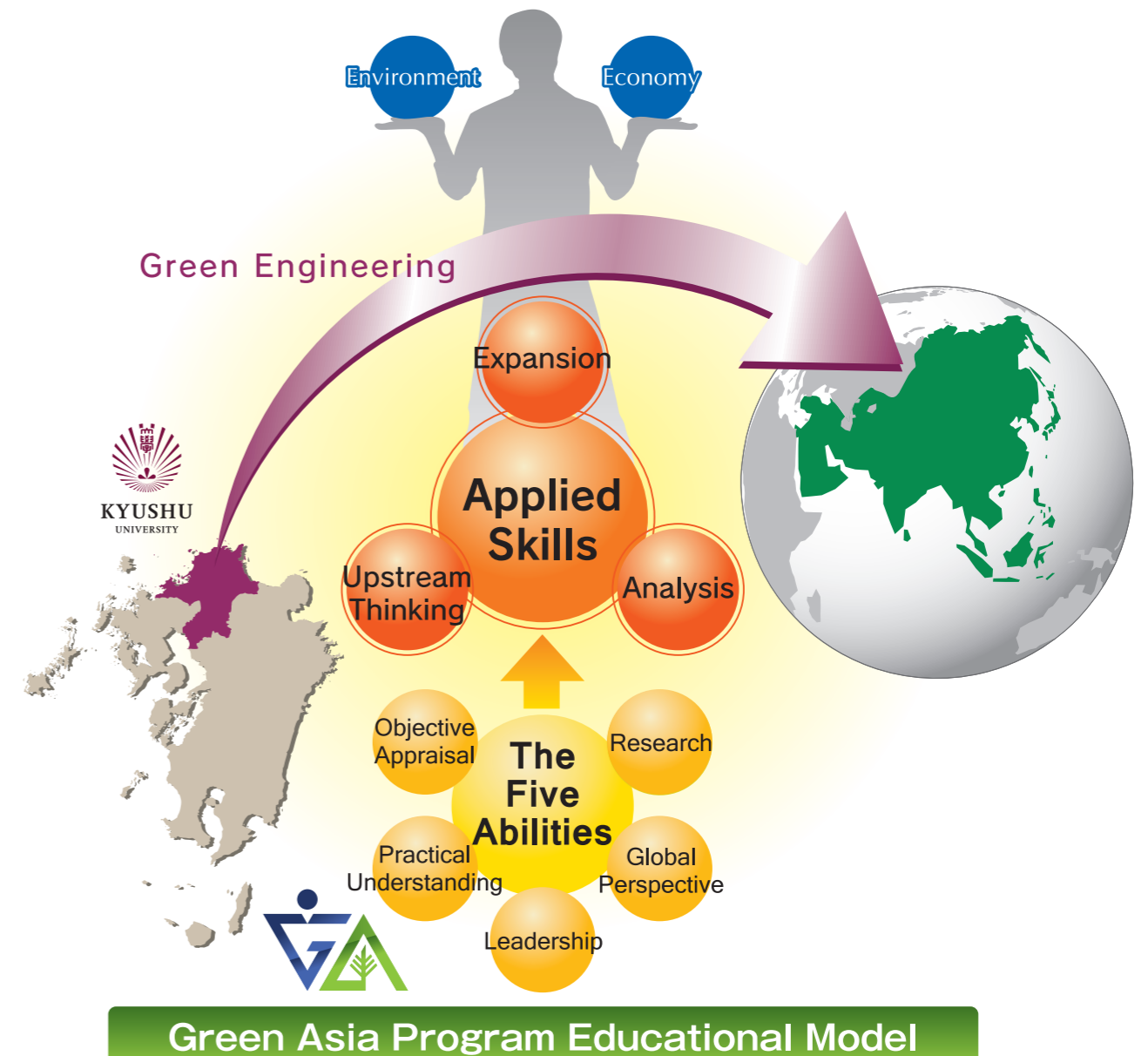


Photo:By the courtesy of Fukuoka Fire Prevention Bureau, Fukuoka City Government



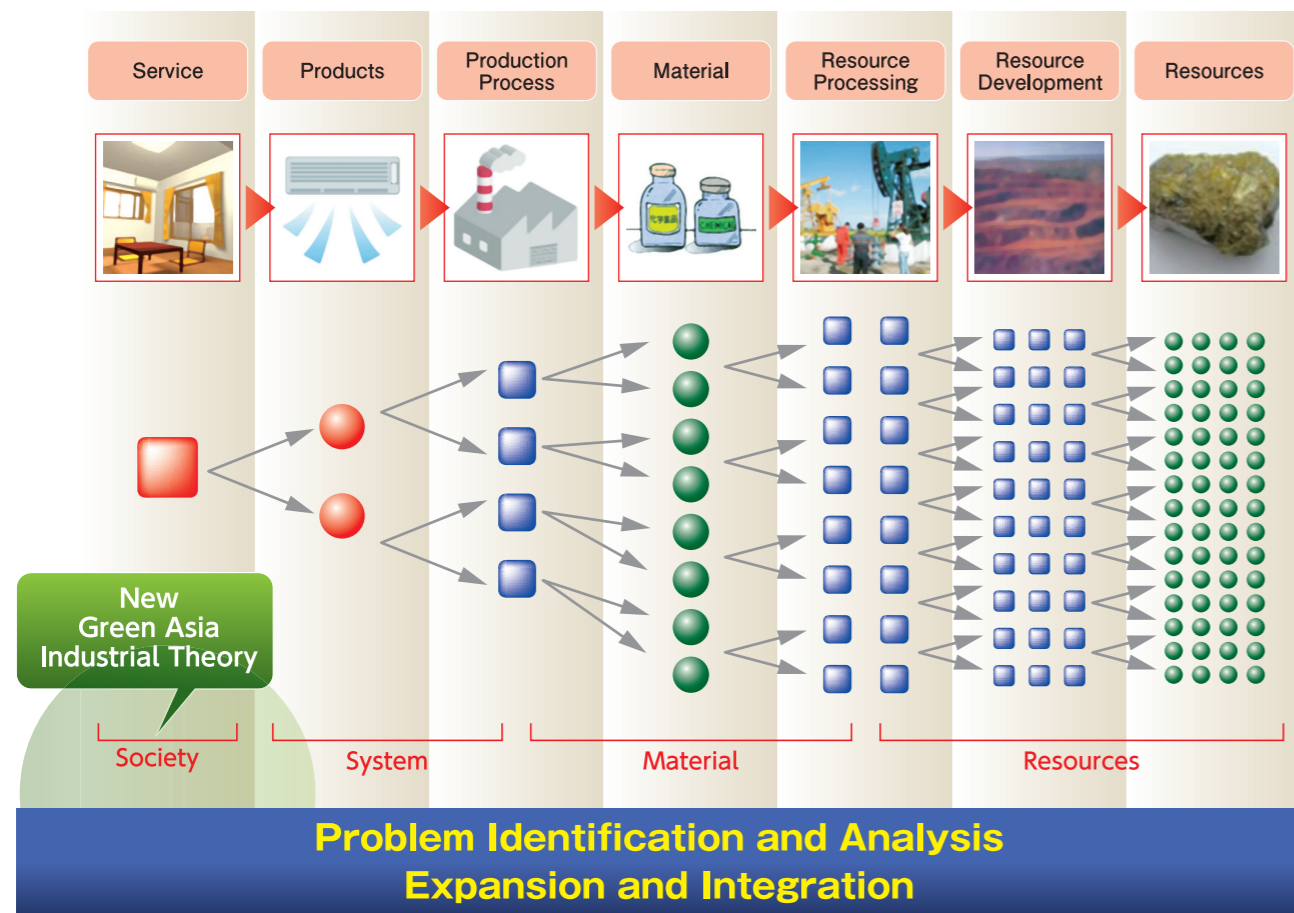
Candidate Cultivation

Cultivating leadership in science and engineering, with the concept of added-value-oriented green engineering, to ensure the coexistence of greening and economic growth in Asia.

Successful candidates have the opportunity to be trained in one of the program's three specialized fields: materials science, system engineering, and resources engineering, with additional lectures on environmental science, and basic sociology and economics. Furthermore, candidates can network with other professionals in Asia through educational training offered domestically and overseas. Candidates who have completed all the required training can assume leading roles in the field with the five key competencies: research, practical understanding, global perspective, objective appraisal, and leadership.

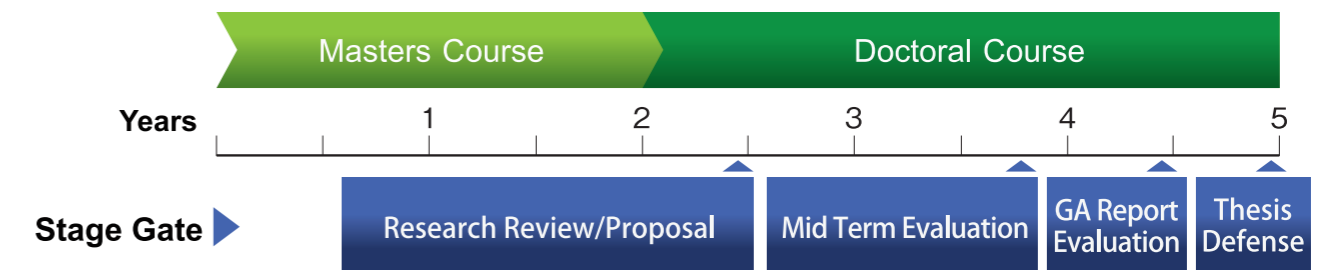
Added-Value-Oriented Green Engineering

Upstream Thinking Process : Service and Product



Program Features

1. Educational System Development: Accepting a wide range of domestic and international students, the program provides interdisciplinary graduate education in addition to promoting reform in the educational system.
2. Curriculum: Apart from the science and engineering studies (including international and industrial internships and international exercises), humanities and other social-science subjects are included in the curriculum (Green Asia research paper).
3. Mentoring Care Unit (MCU): An evolutionary guidance care unit is included.
4. Asia Collaboration Network and Government-Industry-Academia Partnerships: The program connects more than 30 research institutions across Asia and works with 58 organizations within Japan to construct an industrial system in Green Asia through the application of both humanities and sciences.
5. Education Quality Assurance and External Assessment: Preparing educational results and a guidance portfolio by students.
6. Added-Value-Oriented Green Engineering: The program trains individuals to acquire the abilities of upstream thinking, problem analysis, and solutions to accomplish the goal of a Green Asia.
7. Establishment of the Green Asia Education Center.



5-year Consistent Doctorate Program

Learning and Growing Together

Enrollment Quota per Year : 10 Domestic students; 10 International students

Financial Aid : **Scholarship is provided**

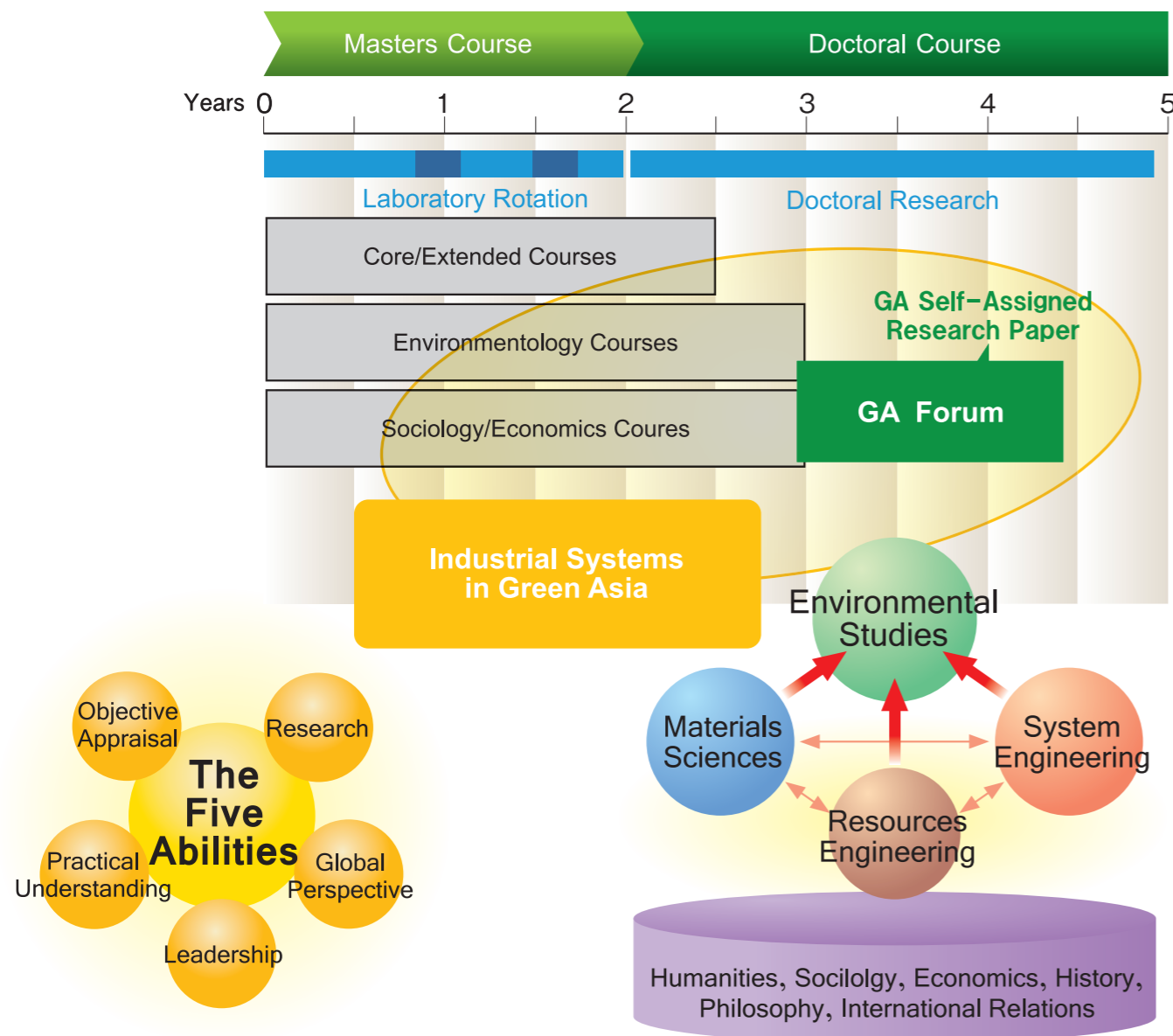




Degree Highlight (1)

An Interdisciplinary Liberal Arts and Scientific International Education Program

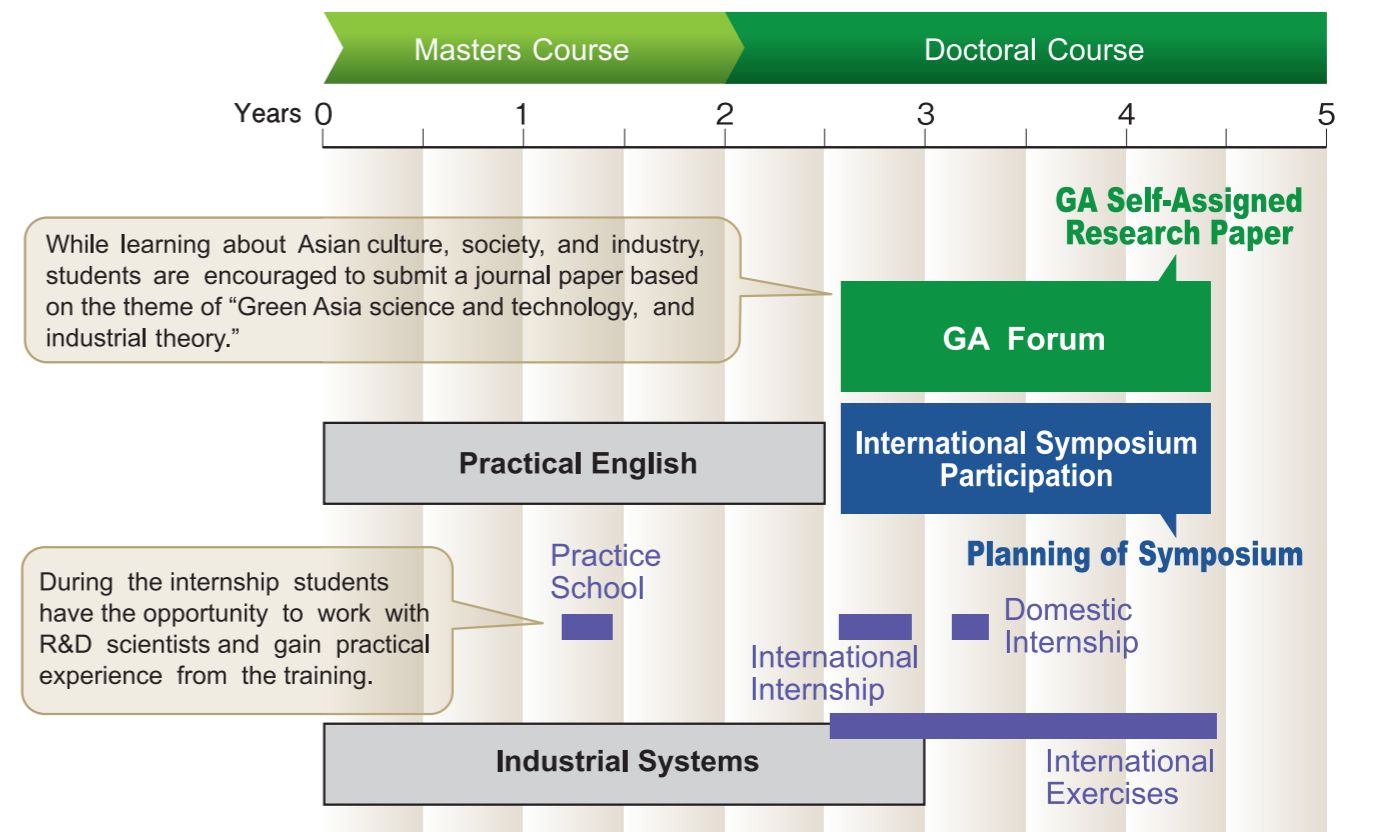
The five-year joint program is designed for students to develop the abilities of research, practical understanding, global perspective, objective appraisal, and leadership in a balanced way. The students with their mentors and tutors should be able to appreciate the apparent development in the learning process. The competency of research and the ability make their own appraisal are developed by taking lectures from the core and extended courses in one of the three specialized majors of materials science, system engineering, and resources engineering. In addition, lessons from the topics of environmental science, basic sociology, economics, practical English, and industrial experience would also lay a concrete foundation for future development.



Degree Highlight (2)

Domestic and Overseas Internship Program

By participating in this internship program, the student will gain valuable work experience in industry and/or research institutes throughout Japan and in key overseas locations, thus fostering their practical abilities. The various activities will be organized as a sequence of practical schools lasting from 1 to 2 months, overseas internships lasting from 2 to 3 months, and finally a short domestic internship of a duration of 2 to 3 weeks. During the practical school, each student will be free to choose from a range of organizations and potential technical mentors, and then make detailed plans regarding the execution of the project under the guidance of their chosen mentors. After approximately 2 years, the student will have the opportunity to acquire a second period of work experience with the same host organization and technical mentors as chosen previously.



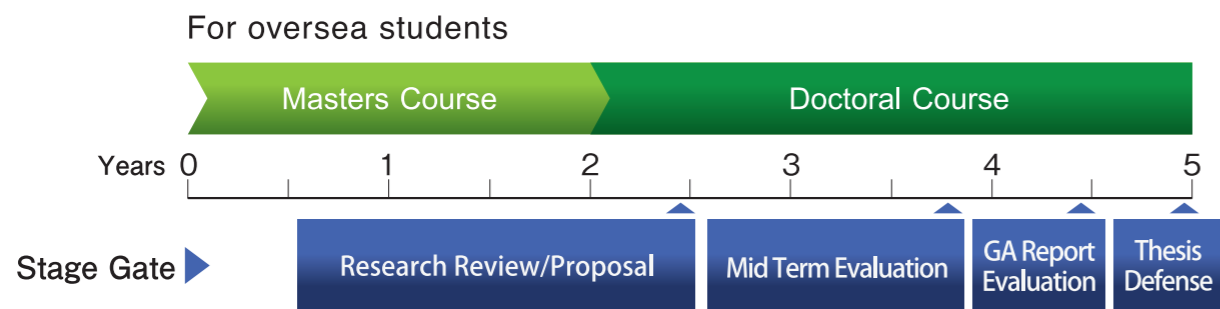


Degree Highlight (3)

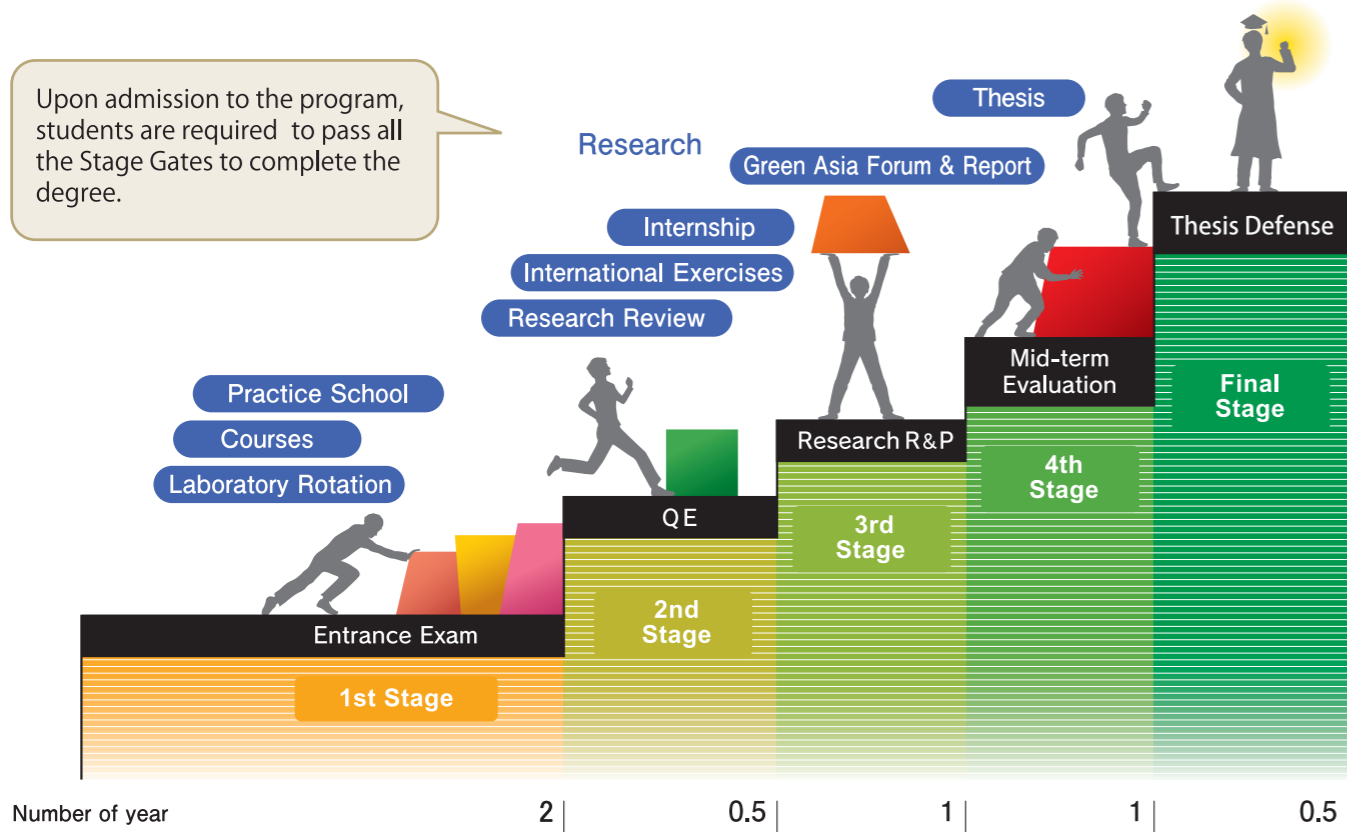
Stage Gate System

A five level Stage Gate System has been introduced to ensure the equality of our graduate program. Students are required to pass each Stage Gate to advance to the next level.

- Stage Gate 0: Entrance Examination
- Stage Gate 1: Qualifying Examination (QE)
- Stage Gate 2: Research Review and Proposal
- Stage Gate 3: Interim Report
- Stage Gate 4: Green Asia Thesis Evaluation
- Stage Gate 5: Thesis Defense



Upon admission to the program, students are required to pass all the Stage Gates to complete the degree.



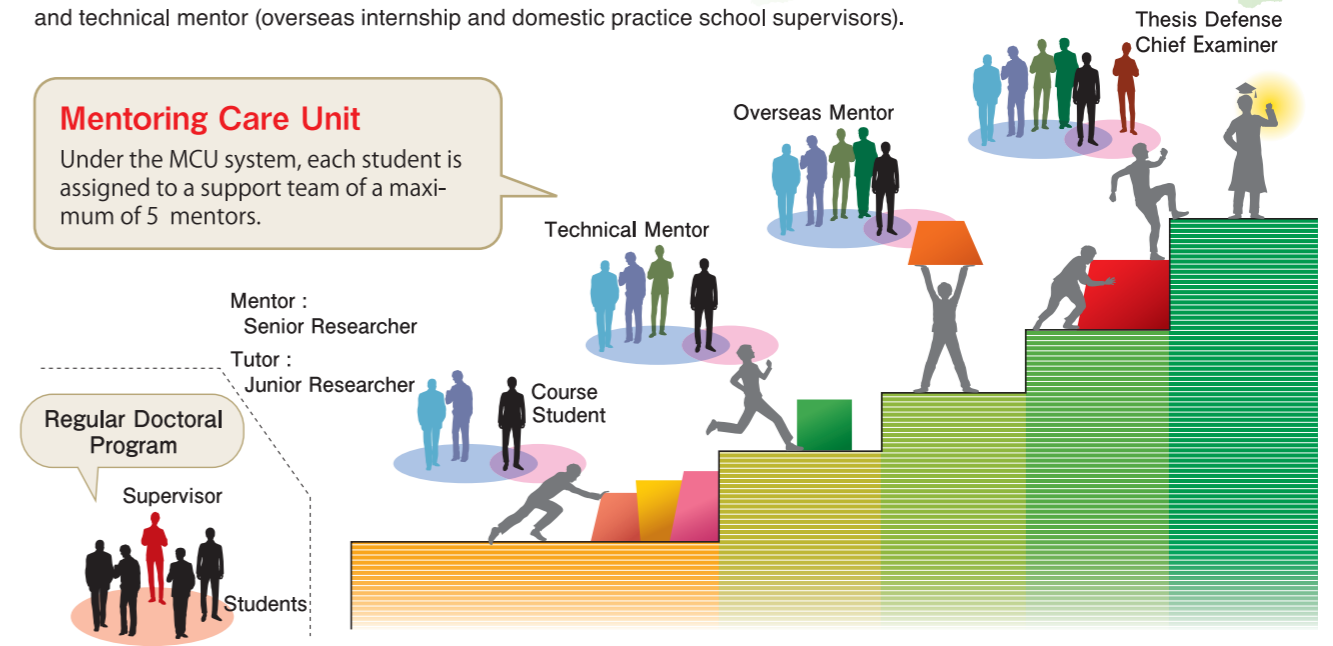
Degree Highlight (4)

Mentoring Care Unit (MCU) Study Support

The MCU guidance system is supported by a group of professional personnel. The system is primarily composed of mentor (senior researcher: program leader), tutor (junior researcher: program assistant), overseas mentor and technical mentor (overseas internship and domestic practice school supervisors).

Mentoring Care Unit

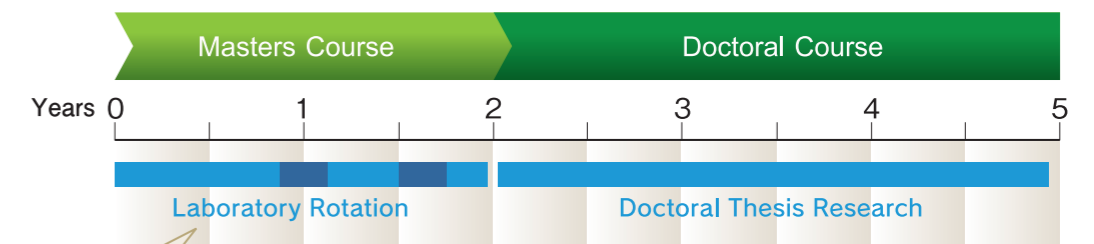
Under the MCU system, each student is assigned to a support team of a maximum of 5 mentors.



Degree Highlight (5)

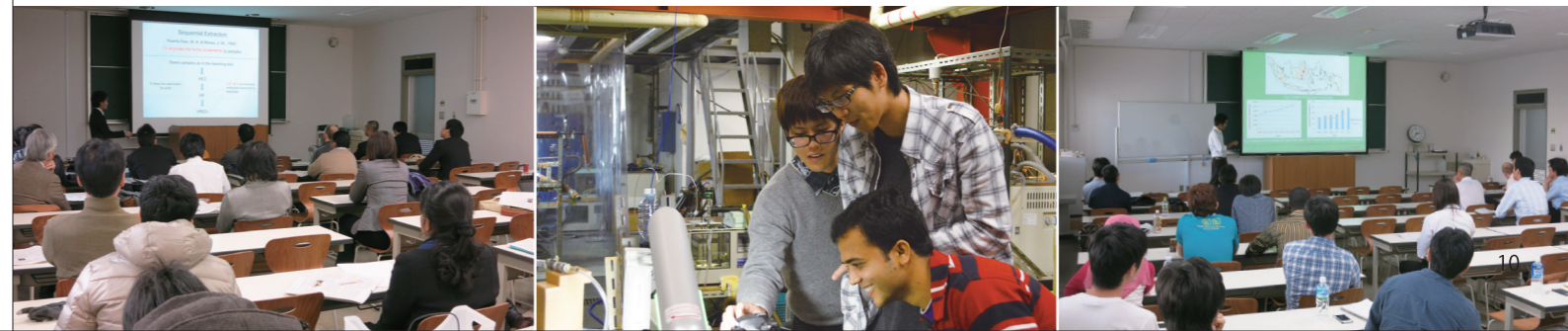
Laboratory Rotation

The laboratory rotation system enables students to work in three different research environments for approximately three months at each location. Unlike the conventional master's program, students are encouraged to select multiple research fields and learn to approach problems from a diverse research perspective.



Laboratory Rotation

Laboratory Rotation is another essential part of the program, which helps students to probe and understand their research interest and ultimately decides their thesis advisor.





Partner Organizations

The three departments (Applied Science for Electronics and Materials, Molecular and Material Sciences, and Energy and Environmental Engineering) from the Interdisciplinary Graduate School of Engineering Sciences and the Department of Earth Resources Engineering, the Graduate School of Engineering are the four pillars of this program, which partner with research institutions within Kyushu University, as well as private sectors, local governments, and overseas academic institutions. Moreover, we have an extensive partnership network with six collaborative institutions overseas and thirty collaborative institutions in the Asia region, which is a significant characteristic of our program.

Kyushu University



Government-Industry-Academia Partnerships



Korea

- Seoul National University
- Pohang University of Science and Technology
- Pusan National University
- Korea Institute of Energy Research
- Sejong University
- Pukyong National University
- Yeungnam University
- Korea Maritime University

Mongolia

- Mongolian University of Science and Technology
- Institute of Botany, Mongolian Academy of Sciences

Uzbekistan

- Tashkent Institute of Irrigation and Melioration

China

- Peking University
- Tsinghua University
- Shanghai Jiaotong University
- Xiamen University
- Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences
- Institute of Chemistry, Chinese Academy of Sciences
- Central China Normal University
- South China Normal University
- Liaoning Technical University
- University of Science and Technology Beijing
- Xi'an University of Architecture and Technology
- Dalian University of Technology
- Lanzhou University

India

- Indian Institute of Technology
- CSIR-National Environmental Engineering Research Institute

Bangladesh

- University of Dhaka

Thailand

- Mahidol University
- Chulalongkorn University
- Suranaree University of Technology

Cambodia

- Institute of Technology of Cambodia

Viet Nam

- Hanoi University of Mining and Geology
- Hochiminh City University of Technology



Taiwan

- National Taiwan University

Malaysia

- Malaysia-Japan International Institute of Technology (Universiti Teknologi Malaysia)
- Universiti Sains Malaysia
- Universiti Tun Hussein Onn Malaysia
- Universiti Kebangsaan Malaysia

Philippines

- University of the Philippines

Singapore

- National University of Singapore

Indonesia

- Institut Teknologi Bandung
- Gadjah Mada University
- Diponegoro University
- University of Hasanuddin
- Padjajaran University
- Bogor Agricultural University



Program Personnel



Program Director

Akira Harata

Professor, Department of Molecular and Material Sciences
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Analytical Chemistry

Research: Ultra-high sensitivity environmental molecular measurement; Development of new spectroscopic measurement methods; Single particle detection; Dynamic behaviors of solvent molecules including liquid molecules; Substance, structure, and orientation of molecules in aqueous media, on the surface and at the interface

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Program Coordinator

Jun Tanimoto

Professor, Department of Energy and Environmental Engineering
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Human, Environmental, and Societal Systems

Research: Human, environmental, and societal systems; Statistical physics; Evolutionary game theory; Statistical physics; Complex sciences; Literary composition, critiques, as well as painting

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Program Vice-Coordinator

Jun-ichiro Hayashi

Professor, Department of Applied Science for Electronics and Materials
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Chemical and Reaction Engineering

Research: Simulation of contribution of multi-components complex molecular-level reactions and reaction design; Heatchemical reaction development for revolutionary carbon resource conversion and the realization of co-production; Meso- and micro-pores material solidification; Development of resource conversion methods for using polymer series gaps as reactionary sites; Development of radical-driven carbon-accelerating gas method; Hydrocarbon modification and carbon material synthesis through Chemical Vapor Deposition and Chemical Vapor Infiltration

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Program Vice-Coordinator

Seigi Mizuno

Professor, Department of Molecular and Material Sciences
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Specialization: Surface Science

Research: Structural analysis of solid surfaces using low-energy electron diffraction and scanning tunneling microscopy; Growth of surface new materials; Fabrication techniques for atomically sharpened tips

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Program Vice-Coordinator

Aya Hagishima

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Specialization: Urban Environmental Engineering

Research: Numerical analysis by urban canopy model, Heat island phenomenon, Ecological environmental mitigation effect, Investigation of the exchange process of heat and molecule in the atmosphere of one city, Microatmosphere observation in urban space, Wind tunnel model experiment related to the air flow pattern in urban space, Evaluation methods of sustainable designs in architecture and cities

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Program Vice-Coordinator

Keiko Sasaki

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Graduate School of Engineering, Kyushu University

Specialization: Environmental Remediation

Research: Remediation of groundwater and soil pollution; Biomineralization; Environmental materials

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Kiichi Hamamoto

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Specialization: Optoelectronics

Research: Opto-electronic devices for optical communication system including optical switch (optical mode switch), and semiconductor laser diode (active-MMI laser diode). Photonic integrated circuits for breath-sensing.

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Minoru Nishida

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Specialization: Crystal Structure Engineering

Research: Microstructural analysis in phase transformation of crystalline materials; Development of functional materials using phase transformation; Mechanical properties and applications of shape memory alloys

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Michitaka Ohtaki

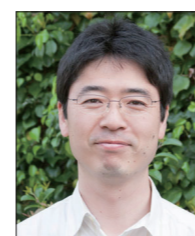
Professor, Department of Applied Science for Electronics and Materials
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Inorganic Materials Chemistry, Applied Physical Chemistry

Research: Environmentally compatible oxide materials for thermoelectric energy conversion; thermoelectric devices for power generation from unused waste heat energy; self-assembly synthesis and physicochemical properties of low-dimensional inorganic materials of single-nm level; materials for active control of electrical and thermal transport; light and energy conversion materials

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Satoshi Hata

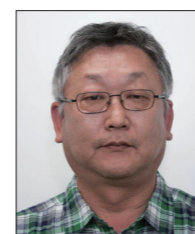
Professor, Department of Applied Science for Electronics and Materials
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Nanostructural Analysis

Research: Development and applications of advanced electron microscopy for nanostructural analysis; Electron tomography; Nanostructure in metals; Order-disorder transformation in alloys

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Seong-Ho Yoon

Professor, Department of Applied Science for Electronics and Materials
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Materials Engineering and Carbonic Materials

Research: Carbonic resource shift; Hydrogen production; Reactionary engineering related to carbonic materials production; Research for the production of environmental catalysts using carbon nano-fibers; Deep removal of heavy oil; Research on nitrogen and metals removal

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Hiroshi Nakashima

Professor, Department of Applied Science for Electronics and Materials
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Specialization: Semiconductor Device Engineering

Research: Elemental research and development for the realization of high-performance Ge-CMOS; Elemental research and development for the realization of onboard high-performance power devices; Crystalline evaluation of thin semiconductor films on dielectric film

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Hirotsugu Kikuchi

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Specialization: Functional Molecular Engineering

Research: Construction of fusion materials using advanced mechanisms of organic molecules; Substance and understanding of frustrated liquid crystals; New model investigation; Applications for device materials

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Shigeto Okada

Professor, Department of Applied Science for Electronics and Materials
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Specialization: Inorganic Chemistry, Electrochemistry

Research: Post lithium-ion battery; eco-friendly electrode active materials; intercalation reaction

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Kungen Teii

Associate Professor, Department of Applied Science for Electronics and Materials
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Specialization: Plasma Materials Engineering, Inorganic Materials Engineering

Research: Synthesis and characterization of electronic and biomedical materials; Vapor phase deposition of diamond, nanocarbon, boron nitride, and silicon carbide; Power semiconductor devices; Field emitters; Ultrahard coatings; Biomedical devices

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Yuriko Aoki

Professor, Department of Molecular and Material Sciences
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Quantum Theoretical Chemistry

Research: Development of highly-effective calculation method of the electronic state of macromolecules and solids; quantum chemistry for the material design of magnetism; conductivity and NLO properties; development of quantitative analysis method of stereoelectronic effect; theoretical chemistry on DNA and proteins

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Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Structural Materials Science

Research: High-temperature deformation mechanism of crystalline materials; Grain boundary structure in crystalline materials and their mechanical properties; Crystal orientation analysis and applications for structural materials

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Hideo Nagashima

Professor, Department of Molecular and Material Sciences
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Organic and Polymer Synthesis chemistry

Research: Environmental harmonic chemistry; development of process use high efficiency catalyst; Organic metal compound; Carbon-metal bonding; Synthesis and analysis of dinuclear complex

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Hiroki Ago

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Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Materials Engineering

Research: Nanoelectronics and flexible electronics; graphene and other two-dimensional layered materials, carbon nanotubes; crystal growth; surface science

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Shigeru Koyama

Professor, Department of Energy and Environmental Engineering
Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Mechanical Engineering and Thermal Engineering

Research: Development of next generation type energy conversion system; Modification of heat pump system; Heat transfer property of carbon dioxide in supercritical and sub-critical region

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Kazuhide Ito

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Interdisciplinary Graduate School of Engineering Sciences, Kyushu University

Specialization: Environmental Engineering and Public Health Engineering

Research: Indoor environmental physics; indoor environment chemistry; indoor environment microbiology; public health engineering

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Tsuyoshi Hirajima

Professor, Department of Earth Resources Engineering
Graduate School of Engineering, Kyushu University

Specialization: Resource Disposal Engineering

Research: Advanced carbon resource disposal and recycling; Reuse of hollow spherical particles from coal emissions; Changing wood biomass and unused, low-quality carbonized hydrogen resources into fuel; Complete recycling of concrete emissions through pyro-processing method; Development of wastewater selection processes

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Specialization: Resource Geology

Research: Construction of geographical databases; Surveys for geological damage from earthquakes; Environmental impact of resource development

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Naoko Okibe

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Research: Biohydrometallurgy, Bioleaching, Biooxidation, Metal Bioremediation, Geomicrobiology

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Bidyut Baran Saha

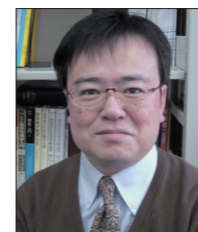
Professor, International Institute for Carbon-Neutral Energy Research (I²CNER), Kyushu University

Specialization: Thermal Engineering, Heat Transfer Engineering, Engineering of Refrigerating and Air-conditioning

Research: Thermally powered adsorption cooling and desalination systems; Energy efficiency assessment

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Hiroshige Matsumoto

Professor, International Institute for Carbon-Neutral Energy Research (I²CNER), Kyushu University

Specialization: Solid State Ionic Engineering

Research: Ion conductive solid material; Development and applied research on functional material that especially employs proton conductive solid material

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Specialization: Wind Engineering

Research: Research and development of sea-based floating compound wind farms; Research and development of small high-efficiency hydroelectric systems using lens watermills; Research on effective utilization of wind energy; Research on local wind condition prediction methods

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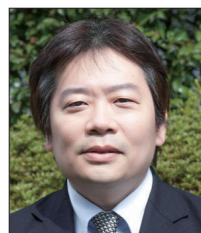


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Research: Contemporary and near-modern Western philosophy; Contemporary and near-modern German and French philosophy

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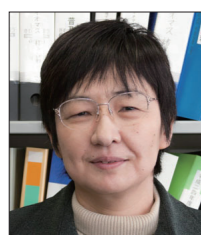


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Specialization: Environmental Economics
Research: Environmental economics based on microeconomic theory; Game Theory analysis of global environmental problems; Effects of uncertainty and irreversibility in environmental policy; Self-enforcing international environmental agreements

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Research: Regional development through biomass; Environmental policy in the countries of Asia; Civil environmental activism; Consumer activism research regarding sustainable living environments

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Research: Engineering

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Specialization: Organic Chemistry
Research: Fine organic synthesis; Asymmetric catalysis; Rare earth metal complex catalyst; Environmentally-friendly synthetic method; Reusable catalyst; Self-organized polymeric complex catalyst; Ionic liquid as reaction media; Chirality sensing and probing

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Kyaw Thu

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Ph.D. in Mechanical Engineering

Specialization: Mechanical Engineering, Thermodynamics, Heat transfer, Sorption, Energy Efficiency
Research: Theoretical and experimental analysis of Sorption systems (adsorption & absorption) for HVAC, desalination application, Polygeneration systems, Indirect evaporative cooling, Thermal and membrane desalination systems (Multi-effect, membrane distillation and hybrid cycles) Second law analysis of various thermodynamic systems

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Andrew Spring

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Ph.D. in Materials Chemistry

Specialization: Polymer Chemistry and non-Linear Optics
Research: Design and preparation of high Tg poly(norbornene) derivatives by Ring Opening Metathesis Polymerization (ROMP) for use as electro-optic (EO) polymer hosts for high molecular hyperpolarizability chromophores.

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Specialization: Quantum Chemistry, Theoretical Chemistry
Research: Development of highly-efficient calculation method for the electronic structure of huge bio-molecules; Development of quantitative analysis method of intra-molecular orbital interactions (stereoelectronic effects etc.); Quantum chemistry based design of conductive, magnetic, and non-linear optical organic materials

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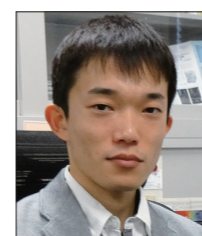


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Specialization: Mineral Processing Engineering
Research: Leaching and flotation behavior of sulfide mineral with electrochemical method

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Research: Development of elementary process technology for realizing high-performance Ge-CMOS, SiC power device. Electrical evaluation of semiconductor structures.

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Specialization: Modern western philosophy
Research: Environmental philosophy concerning scientific uncertainty and ignorance; Philosophy of science

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Naoko Mae

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Ph.D. in Global Environmental Studies

Specialization: Sociology, Environmental System
Research: Development of methods for energy and environmental assessment, Design of community for low carbon recycle-based society, Theory of internet community

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Student Voice



Tsuyoshi Sato
Energy and
Environmental Engineering

Now we are trying to solve environmental problems from a scientific view point, however, approach through the position of humanities is also important to understand environmental problem, especially, eco-politics is directly related to actualize scientific production. So, in Lab. rotation program, I'm studying about international and domestic eco-politics aiming to find the best way for utilizing scientific fruits for our society.

In this study, I learned the importance and difficulty of decision-making of society for environmental problem, for example, global warming is the most important problem of modern world but attitude of each nation is not monolithic. Same impediment exist in local scales, such as the construction of geothermal power plant, but social decision-making is primary and inescapable problem for not only politicians but also scientist because we must play an important role for the achievement of sustainable development for our future. In the remaining term, I'll do my best effort to acquire the ability which is necessity for next-generation scientists.



**Gede Dalton
Surya Prayoga**
Applied Science for
Electronics and Materials

"God is creating human being to help each other and to give contribution for his/her society". Those words become my motivation to keep learning, gaining experiences, and hoping that someday I could use my knowledge for giving significant contribution to the society. My name is Gede Dalton Surya Prayoga. I graduated with from the Chemical Engineering Department, Gadjah Mada University.

Aside from specific course and research related to my main field of study, GA program also offers me the experience to learn multidisciplinary knowledge such as economic, social, environmental as well as industrial application. Those well-balanced experience will eventually allow me to help, assist, and give contribution to the society and make our world became a better place to live in. I have an intention to work in an international field related Biomass Energy. Being GA student in Hayashi-Norinaga laboratory will definitely give me the chance to gain deeper principles and practical skills as well as to manage innovative and appropriate projects related to biomass energy. Nowadays, biomass energy utilization needs to be improved to great extent in my country, Indonesia, as one of developing country with abundant source of biomass. Therefore, it is really my desire to play a role to help it grow more effectively through special experience that I will gain by studying this field in Kyushu University. I hope in future we can find appropriate biomass energy utilization to gain more success and benefit related to this field.



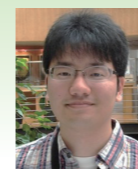
**Tungjiratthitikan
Pennapa**
Molecular and
Material Sciences

My name is Pennapa Tungjiratthitikan. From my view, lab Rotation is one of the interesting activity during studying in Green Asia Program. In normal Masters Course, we have to focus only our own research topic but GA course gives us a chance to have an experience in other lab fields also. My research area is in organic synthesis by using Lewis acid catalyst in organic reaction with Assoc. Prof. Hiroshi Furuno as a supervisor. About the lab rotation, I discussed with him in terms of choosing another two laboratories fit to our benefit and we

have designed both two labs in different research field.

The first lab rotation is Organometallic laboratory under Prof. Hideo Nagashima, I'm working on it in this time. This lab round, I'm researching on Atom Transfer Radical Polymerization (ATRP) using our own catalyst in Nagashima's lab and I'm also continue doing my previous experiment under Assoc. Prof. Pranee Phinyocheep in Thailand. We think, this is a good opportunity to collaborate our research study between here and Mahidol University, Thailand.

Next lab rotation we have discussed is a bit far from our field; that is Analytical chemistry laboratory under Prof. Akira Harata. Because we can say "every research study cannot avoid analytical method and analytical machine. Therefore, we choose this lab to study an analytical chemistry and practice the machine operation. We believe that an experience in this lab will fulfill the knowledge and skill for our own research in the near future. Besides the improving of laboratory skills, we can learn working style and get more friendship in different laboratory also. Although this activity is a hard work, but I really love it and I think another GA students also like it because of its benefits.



Takaya Fujisaki
Molecular and
Material Sciences

My name is Fujisaki. I would like to introduce my experience of this program. There are approximately 10 foreigners and 10 Japanese students accepted to this course for each school year, and we use English as the official language in all classes and extracurricular activities. This was my first experience and therefore, this program is surely full of surprises and discoveries.

These days, I have the opportunity to utilize our characteristic curriculum and engage in an activity termed "Laboratory Rotation". This is the opportunity for all Green Asia students to join two laboratories in addition to my main laboratory. This will help to broaden my view points.

I've joined the laboratories for computational science and material science. I am especially excited by the latter which is the laboratory of Massachusetts Institute of Technology in Kyushu University. The reason why I joined is that I wanted to discuss my topic in English and with people from a leading university in the world.

This curriculum is the part of Green Asia Program, and I think that I can broaden my knowledge by stacking all curriculum. I will always be grateful for relevant parties in this course and their efforts to help me achieve my goal.



Sindy Dwiki
Earth Resources Engineering

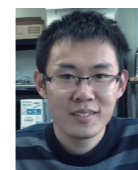
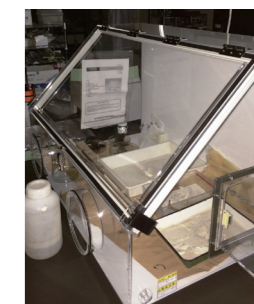
I belong to Rock Engineering and Mining Machinery Laboratory, Department Earth Resource Engineering in Ito Campus Kyushu University. So far I feel very fortunate with the opportunities given to me, especially for formal education and life education, because I had to get out of my comfort zone and interact with people from another nationality. I began to understand the concept of a world citizen, where the ownership feeling of the earth should be divided not only within the region but must be based on

the awareness that we are human beings who live on the same earth.

Green Asia program itself has been very interesting for me from the beginning, especially for its goal to produce global leaders who are expected to become the leader in their respective countries. Surely it is not grandiose concept for me, because I believe every person is formed by the path of education, both formal such as a university and informal, which can be obtained from anywhere. By educating generations not only for those aspects of formal education, I am really sure that it is liable the goal of Green Asia program to produce global leaders can be succeeded. To make this dream happen, I as Green Asia student will try my best to be actively involved in all of Green Asia program and activities.

My research is about acid mine drainage (AMD) that caused by mining activities. Since mining is infamous activity that influence environment, it is important to deal with possibility of bad impact that can happen during mining activity and when after mining is finished. One of serious environmental problem from mining is AMD that generally has low pH and/or high concentration of heavy metal, which is very toxic for environment. How to prevent and treat the AMD in mining site is the focus of my research.

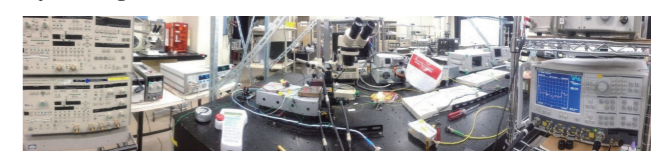
After graduated from Kyushu University, I hope to continue my study but in real practice of application from my research study. After that, I really would like to work in Indonesia government ministry, especially for ministry of energy and mineral resources Republic Indonesia. Still long way and maybe not an easy one but I will try hard to pursue my dream.



Hong Bingzhou
Applied Science for
Electronics and Materials

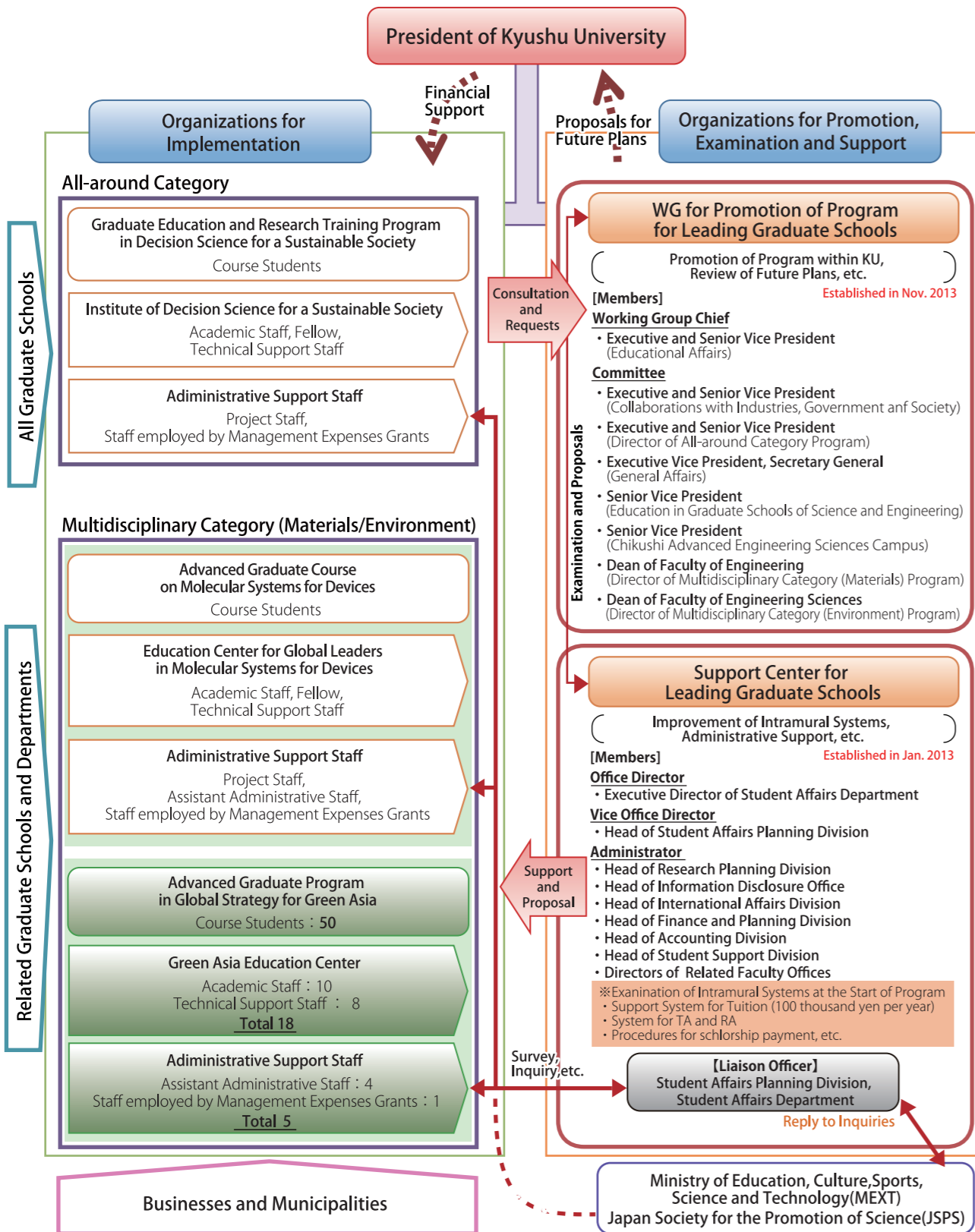
I came from China to Japan. After coming here, I fell in love with this beautiful place soon. Now I'm working in Hamamoto laboratory of optical electronics science in Chikushi campus. My research topic is about semiconductor laser, something full of mystery but very interesting. The Green Asia Program is a quite good environment with different culture. People from Japan, Egypt, Bangladesh, Indonesia— Different culture are mixed here. One of my aiming is to be a coordinator of multi culture surrounding.

Sustainable development and environment protecting, these are the two key words of Green Asia Program. Our destiny is to find the possibility of these two key words in our research. This should be and can be solved by our generation through Green Asia Program!





Program for Leading Graduate Schools Implementation Promotion and Support System in Kyushu University



(listed in Alphabetical order of nations)

Overseas Mentors

Prof. Md.Sekul Islam
Dean & Professor, Faculty of Engineering and Technology
University of Dhaka, Bangladesh

Prof. Nilesh J. Vasa
Professor, Department of Engineering Design
Indian Institute of Technology Madras, India

Prof. Rudy Sayoga Gautama
Professor, Faculty of Mining and Petroleum Engineering
Institut Teknologi Bandung, Indonesia

Prof. Megat Johari Megat Mohd Noor
Professor, Malaysia Japan International Institute of Technology (MJIT)
Universiti Teknologi Malaysia, Malaysia

Prof. Kim Choon Ng
Professor, Faculty of Engineering
National University of Singapore, Singapore

Prof. Taweechai Amornsakchai
Associate Professor, Faculty of Science
Mahidol University, Thailand

(listed in Alphabetical order of institutions)

Technical Mentors

Mr. Shinya Okada
Senior Executive Officer, General Manager of Shiga Plant
Deputy General Manager of Airconditioning Manufacturing Division
Daikin Industries, Ltd.

Mr. Shinsuke Tomita
Director, Strategic Comprehensive Special Zone Promotion Division
Fukuoka Prefectural Government

Dr. Manabu Takahashi
Fellow, General Manager, Head of Sheet & Coil Laboratory, Steel Research Laboratories
Technical Research & Development Bureau
Nippon Steel & Sumitomo Metal Corporation

Dr. Kimiaki Utsunomiya
Advanced Technology Information Department, Technology Division
Sumitomo Metal Mining Co., Ltd.

Dr. Yasushi Nakamoto
Administration & Planning Dept.
Corporate Research & Development
Ube Industries, Ltd.

Access



Ito Campus

[Route 1]
Fukuoka Airport → (Subway Kuko Line) → [Meinohama Station → (Transfer to JR Chikuh Line)] → Kyudai-Gakkentoshi Station → (Transfer to Showa Bus) → Ito Campus

* Take the Fukuoka City Subway going toward "Meinohama" or "Karatsu" from Hakata Station.
Take the JR Chikuh Line going toward "Karatsu" at Meinohama Station, and get off at Kyudai-Gakkentoshi Station.

[Route 2]
Fukuoka Airport → (Subway Kuko Line) → Hakata Station or Tenjin Station → (Transfer to Nishitetsu Bus) → Ito Campus

Chikushi Campus

[Route 1]
Fukuoka Airport → (Subway Kuko Line) → Hakata Station → (Transfer to JR Kagoshima Line) → Onojo Station → Chikushi Campus

[Route 2]
Fukuoka Airport → (Subway Kuko Line) → Tenjin Station → (Transfer to Nishitetsu Tenjin-Omuta Line, Nishitetsu-Fukuoka Station) → Shirakibaru Station → Chikushi Campus