

I. Principles, Organization, and Management System of “Green Asia Program”

1. Features and Principles of the Program

1.1. Candidate Cultivation

The program aims to develop exceptional leaders who can contribute to the achievement of “Green 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, basic sociology, and economics. Furthermore, candidates can network with other professionals in Asia through educational training offered domestically and abroad. Candidates who have completed all the required training can assume the leading role in the field with the five abilities of research, practical understanding, global perspective, system landscape, and leadership.

1.2. Program Features

1. Education System Development:

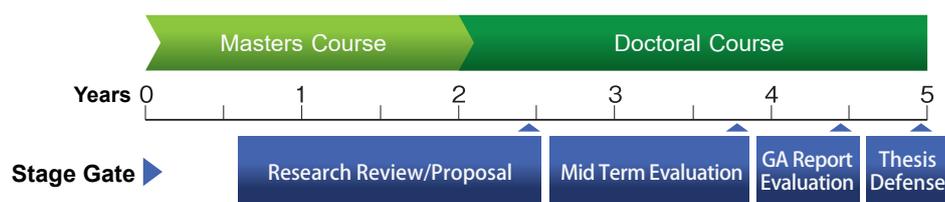
Accepting a wide range of domestic and international students, the program provides interdisciplinary graduate education in addition to promoting reform in the educational system.

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) (**Figure 1-1**).

3. Mentoring Care Unit (MCU):

The program also contains an evolutionary mentoring care unit.



- 5-year Consistent Doctorate Program

- Learning and Growing Together

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

- Financial Aid : Scholarship is provided

Figure 1-1. Educational System and Curriculum in the Green Asia Program

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:
The program prepares educational results and guidance portfolio for each student.
6. Added-Value-Oriented Green Engineering:
The program trains individuals to acquire the abilities of upstream thinking, problem analysis, and expansion to accomplish the goal of Green Asia (**Figure 1-2**).
7. Establishment of the Green Asia Education Center

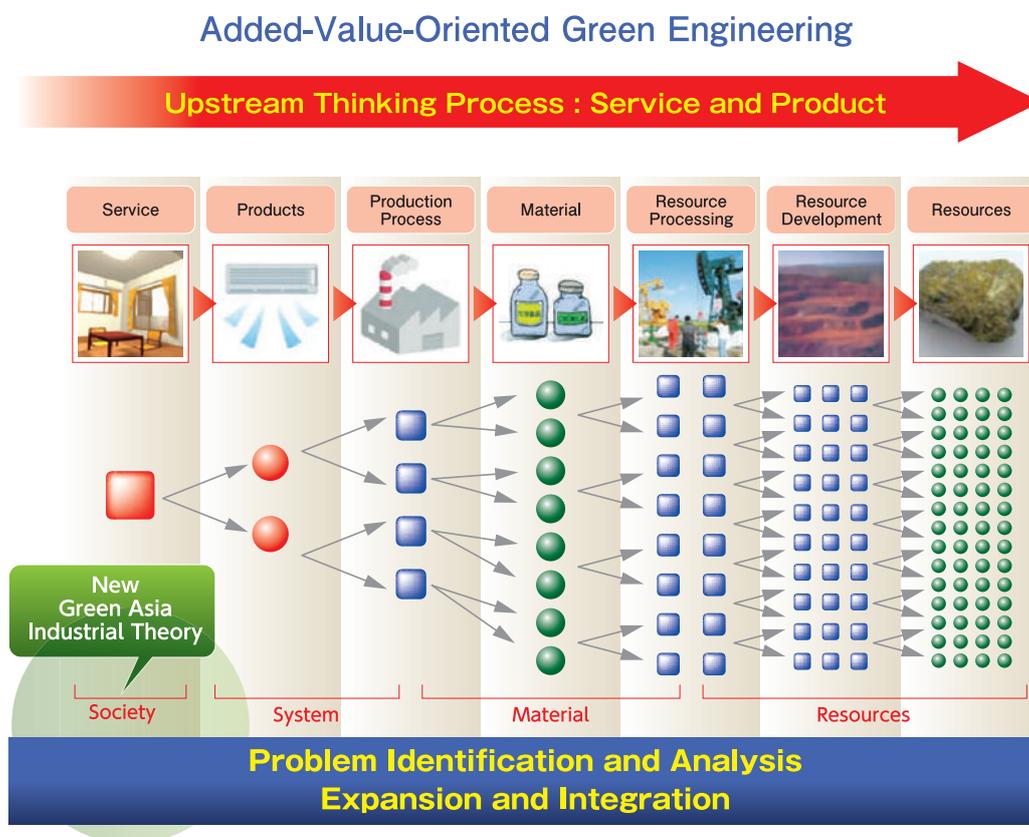


Figure 1-2. From Current Technology to Added-Value-Oriented Green Engineering.

1.3. Basic Principles

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

At Kyushu University, the Interdisciplinary Graduate School of Engineering Science 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 enrolled in one of the three specialized majors (materials science, system engineering, and resources engineering) will also complete coursework in environmental science, basic sociology and economics. Furthermore, with the knowledge and practical experiences gained domestically and overseas, students will attain the five abilities (research, practical understanding, global perspective, system landscape, and leadership) required to be a part of a human resource network in Asia. Furthermore, they will receive the doctoral degree with “Advanced Graduate Program in Global Strategy for Green Asia” certification upon completion of the program.

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

An effective strategy has never been implemented to enable countries to accomplish sustainable economic growth while dealing with environmental and resource restrictions related to the mass consumption of fossil fuels. In this century, our country’s role is to develop a global model that distinguishes itself from the Western-centric model so as to realize a green Asia. Negative influences from globalization have emerged, such as the ever-widening gap between the rich and the poor, rapid energy consumption in Asia, and rising price of fossil resources. The Global Strategy for Green Asia is a flexible approach based on socially, industrially, and economically independent development that has arisen from within Asia and Oceanic history and culture. Such approach with a strong global network generates a synergistic effect between greening and growth.

2. Administrative System

The major pillars of this program are three departments (Applied Science for Electronics and Materials, Molecular and Material Sciences, and Energy and Environmental Engineering) from Interdisciplinary Graduate School of Engineering Science and one department (Earth Resources Engineering) from the Graduate School of Engineering. In carrying the program into execution, the above four departments have been cooperating closely with research institutions within Kyushu University, as well as private sectors, local governments, and academic institutions oversea. The activities during the academic years 2014-2015 are summarized in **Appendix 1**.

2.1. Management Organization

The current managing organization consists of two boards, three committees, and several working groups (**Figures 1-3**). The Management Board has been expanded so as to include core members of the other committees. High priority is given to the Academic Affairs Committee under which several related working groups are set. Such an organization makes it possible to manage the Green Asia Program effectively, mainly by reducing unnecessary meetings.

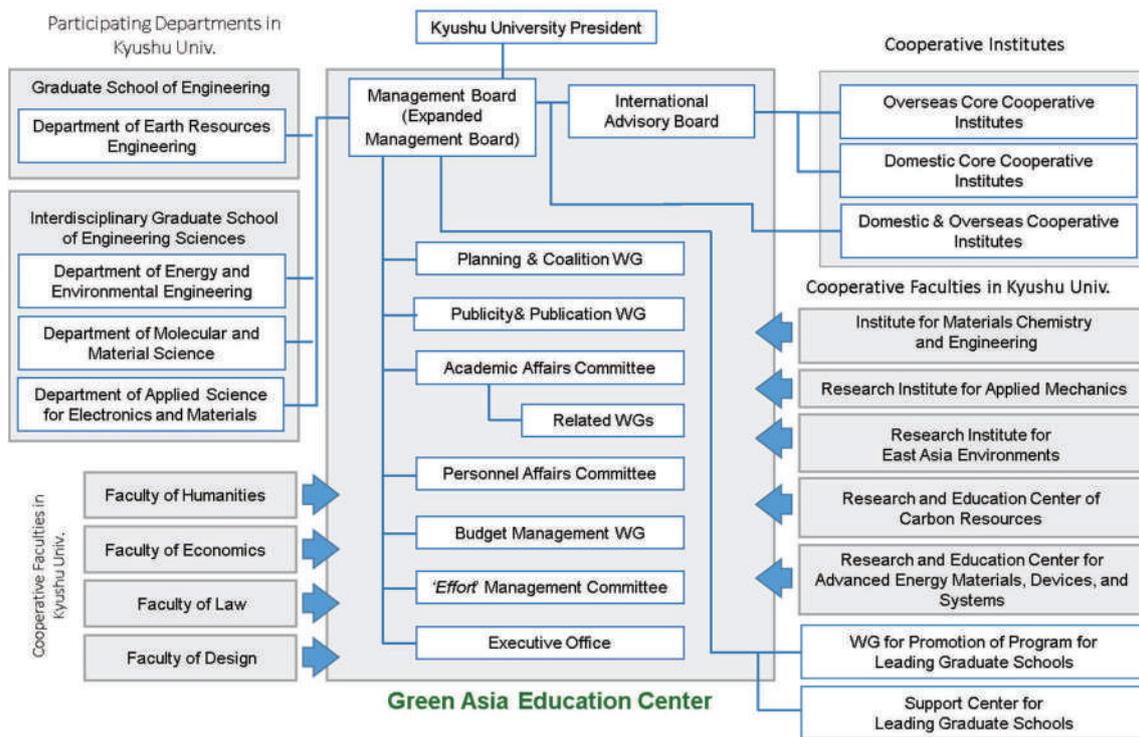


Figure 1-3. Management Organization as of April 2014.

2.2. Green Asia Education Center

The Green Asia Education Center was established on December 2012 as the educational facility that conducts the Green Asia Program. The committees and working groups shown in the preceding section are managed by this center. In the 2014 and 2015 academic years, the number of the faculty members belonging to the center was 10 (2 professors, 1 associate professor, and 7 assistant professors). The number of the staffs belonging to the executive offices of the center is 13 (1 chief, 5 administrative assistants, and 7 technical staffs).

2.3. Rules

The rules and regulations that govern the Green Asia Program are listed below (for details, see **Appendixes 2-12**).

Regulations for Kyushu University

- Regulations of Kyushu University; Article 13 (**Appendix 2**)
- General Regulations of Graduate Schools of Kyushu University; Article 17 (**Appendix 3**)
- Regulations for Kyushu University Program of Leading Graduate Schools (**Appendix 4**)
- Regulations of the Green Asia Education Center (**Appendix 5**)
- Provisions for the Financial Allowance of the Program for Leading Graduate Schools of Kyushu University (**Appendix 6**)
- Tuition Fee Support for Students of the Kyushu University Program of Leading Graduate Schools (リーディングプログラム学生に対する授業料援助制度) (**Appendix 7**)

- Provisions for Assistance to Centers of Special Large-Scale Education and Research Projects (特定大型教育研究プロジェクトの拠点への支援に関する要項)
- Program for Leading Graduate Schools Financial Allowance System—Explanatory material (**Appendix 8**)
- Program for Leading Graduate Schools Payments Ledger
- Pledge (for recipients of the financial allowance)

Regulations for the Interdisciplinary Graduate School of Engineering Science

- Regulations of the Interdisciplinary Graduate School of Engineering Sciences of Kyushu University (**Appendix 9**)
- Report on the Establishment of the Special Education and Research Course (特定教育研究講座の新設等に係る報告書)
- Plan for the Establishment of the “Global Strategy for Green Asia” Course at the Interdisciplinary Graduate School of Engineering Science (総合理工学府・コース新設計画書：グリーンアジア国際戦略)
- Qualification as a Faculty Member and Tutor/Mentor at the Inter disciplinary Graduate School of Engineering Science

Regulations for the Graduate School of Engineering

- Regulations of the Graduate School of Engineering of Kyushu University (**Appendix 10**)
- Report on the Establishment of the Special Education and Research Course (特定教育研究講座の新設等に係る報告書)
- Plan for the Establishment of the “Global Strategy for Green Asia” Course at the Graduate School of Engineering (工学府・コース新設計画書：グリーンアジア国際戦略)

Regulations for the Green Asia Education Center

- Green Asia Education Center - Internal Regulations Regarding the Use of Library Facilities (**Appendix 11**)
- Green Asia Education Center - Internal Regulations for Lending Laptop Computers (**Appendix 12**)

3. Comments and Response

In academic years of 2014 and 2015, we had site visit by the program officer twice (February 2015 and May 2015). In addition, there was an on-site inspection for the mid-term evaluation on October 2015. The following are comments and matters pointed out in the subsequent reports: the Program Officer Follow-up Report 2014 and the Mid-term Evaluation Report 2015. Our responses to them are also shown here. We omit the ‘questions and answers’ done on the site because noting down them goes into particulars too much. The Program Officer Follow-up Report 2015 will reach us in this autumn.

Program Officer Follow-up Report 2014

(1) Concerning Laboratory Rotation, there are several problems to consider. The Green Asia faculty members should be more involved with the selection of accepting laboratories. Reconsideration and improvement seem necessary.

- Students tend to select laboratories similar to their own laboratory, but this might make Laboratory Rotation more or less meaningless.
- For oversea students, it seems difficult to find laboratories which are suitable for their Laboratory Rotation.
- It is desirable for students to go to laboratories different fields such as, for example humanities and sociology. But it is difficult to look for such laboratories by themselves.
- Teaching staffs in the accepting laboratories do not always understand well the significance of the Laboratory Rotation. In such a case, it is difficult for a student to do effective research.
- After finishing it, students must complete the report of more than 3000 words. Some of them said that this demand might be excessive a bit.

Response:

We carried out a questionnaire survey about the Laboratory Rotation for all the Green Asia course students. Most of the students who had completed it said that it was useful, but there remained some complaints about shortness of the term, heavy imposed report, etc. To improve the situation, we took some steps. As a result, at present, students can see ‘Points to Notice in taking Laboratory Rotation’, a list of selected laboratories in the Laboratory Rotation so far, etc. on the web page. Also, we established a ‘message board’ on web; course students can submit anonymously comments or questions about course taking, and university life in general.

(2) Some students say most of the faculty members of the Green Asia project (i.e. teaching staffs belonging to the Green Asia Education Center) do not look like they are taking part in the Green Asia Program. It is hence important to clarify their roles and is required to establish a system in which they participate more in the Green Asia educational matters, e.g. grasping the situation course students and taking care.

Response:

Each faculty member has their own roles and responsibilities in the Green Asia project. However, students are not familiar with duties other than lectures (e.g. planning, publicity, coalition, admission test, course design, grade evaluation, budget management, etc.) So, there might be few opportunities of interchange between the course students and the faculty members who are not in charge of lectures. To resolve these unfavorable situations, we are trying to increase the opportunities (using various Green Asia events) in which students can talk and interchange with the faculty members.

(3) Also, some students say: Because of many credits required, they are so busy that they have less time to spare for their own research. We know the Green Asia Program has attempted to moderate the requirement for submission of PhD thesis so that students can submit the thesis if they have at least one peer-reviewed paper. Actually, however, whether the submission is

possible or not depends on each department to which a relevant student belongs. Students feel anxieties about which rule is applied.

Response:

The Green Asia curriculum is being designed so that the course students can complete most of the classroom lectures before they start full-scale research activities and so that the burden students feel should be mitigated with the progress of school years. ‘International Internship’ and ‘International Exercise’, both of which are allocated in the latter half of the curriculum, give quite important opportunities to students to deepen their own research and learn a lot of things useful for preparation of PhD thesis. So far, some measures were taken so as to mitigate the student’s burden in credit acquiring and attainment of various requirements. One of these measures to be highlighted is that ‘Green Asia Afternoon Colloquium’ has become a regular Green Asia subject. Such improvement is still continued.

In 2015 academic year, three Green Asia students were awarded ‘the IGSES Prize’ (2 students) and ‘the GSE Prize’ (1 student) (IGSES: Interdisciplinary Graduate School of Engineering, GSE: Graduate School of Engineering). Thus, we can say course student’s performances and achievements are rated highly within Kyushu University.

The requirement for submission of PhD thesis differs a bit depending on which graduate school (i.e., IGSES or GSE) a candidate student belongs to. In order to prevent confusing and unnecessary worry, a prior instruction is thoroughly in place.

- (4) Students are feeling uneasy about finding employment. I know the Green Asia Program is dispatching the course students to companies under the internship program named ‘practice school’. Then, is there any possibility such that a student gets a job in the company where he/she experiences the internship? Is the university making efforts for that? It is desirable to provide an employment support system in a visible form.

Response:

We provided an opportunity of ‘simulation job interview’ in which the course students can learn how to sell themselves to companies, government and public agencies. The interviewers were from Nippon Steel & Sumitomo Metal Co. and Japan International Cooperation Agency (JICA). Five course students attended to experience this simulation interview. They say, the interview was quite useful because they could learn the way of presentation different from those in research presentation and got feedback from the interviewers. We continue to set such opportunities for simulation job interviews.

- (5) At the session to exchange opinions with the course students, I found that not a few students have recognition that students should follow teachers. This was quite a surprise for me. It is desirable to consider the reason why the students think so. Set up an environment in which students can speak freely and consult with teachers.

Response:

We believe that the faculty members taking part in the Green Asia Program never have such recognition. However, there might be some overseas students who feel strange or uneasy when

facing one of the ‘Japanese-type teacher-student relationships’ different from those in their countries.

To eliminate these difficulties or uneasiness as much as possible, we carried out a questionnaire survey about LT and other lectures (e.g. Practical English), set up a message board on the Web to which course students can submit their opinions or questions anonymously, and established a place of easy information exchange using a social networking service (Facebook). Several questions and requirement were sent to the message board so far. These include grade evaluation, exemption of tuition fees, how to write papers in English, etc. Course students can confirm their achievements and grades by themselves on the Web.

Mid-term Evaluation Report 2015

- (1) Green Asia Program should think out a method for getting far more excellent Japanese students. As for financial support to the course students, it is desirable to ensure that the support (e.g., similar amount of incentive payment) is continued even after the government support is over. Special care should be paid so that students can concentrate on their own research and Green Asia Program-related activities.

Response:

So far, course students who showed excellent results in ‘Qualifying Examination’ and ‘Research Review and Proposal’ were given increased amount of financial support and research fund. In addition to this, for further enhancement of the incentive to research, we introduced one more system in 2015 academic year that students with outstanding results in their research and/or learning are commended and given another fund. In parallel we tried to enhance introduction and explanation of the Green Asia Program using opportunities such as ‘Open Campus’, orientations for incoming freshmen, etc. Also, we have considered employing the students who are expected to enter IGSES or GSE as research assistants. This would make students think positively about entering the Green Asia course. From these, we expect the number of Japanese students increase from 2016 academic year.

At present it is unclear how to solve the financial issues after the government support is over. As for 2019 academic year, the fiscal year following the last supported year, it is sure that Kyushu University supplies some of course students with similar amount of financial incentive. Discussion is being done at the Working Group for the Promotion of Program for Leading Graduate Schools under the direct control of the university president.

- (2) To eliminate the difficulties due to dispersed two campuses, it is necessary to improve the education environment so that active discussions between the Green Asia Program teachers and students can be expected. It is recommended to liberalize the use of a teleconference system by students.

Response:

We have been using effectively a remote lecture system and a teleconference system for ordinary classes. When the movement between two campuses, Chikushi and Ito, is needed, we can utilize a university shuttle bus. Some subjects (e.g., Practical English) are offered on the two

campuses. By these measures, a significant part of the inconveniences due to the dispersed campus is resolved.

- (3) To our question about the overseas students' dissatisfaction, which was done prior to the on-site inspection, Green Asia Program answered that some of them may feel strange or uneasy about the 'Japanese-type teacher-student relationship' different from those in their countries. It is important to develop the education environment in which students can speak freely and get advices. Special care should be paid.

Response:

In order to hear and respond to various comments and questions from course students, we have set up a message board (electronic complaints box) on the Web. Course students can submit any time their opinions or complaints anonymously. Submitted matters are soon discussed in the Green Asia Faculty Members Meeting and used to improve the Green Asia Program. In addition, there is a place of easy information exchange using a social networking service (Facebook).

As just described, we have established education surroundings which Green Asia Program teachers easily notice the doubts of overseas students and take care of them.