2011 Program for Leading Graduate Schools by MEXT

Phoenix Leader Education Program (Hiroshima Initiative) for Renaissance from Radiation Disaster

FY2017

Self Study Report

－Hiroshima University－

Introduction

Since its adoption for the 2011 Program for Leading Graduate Schools by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Hiroshima University Graduate School Phoenix Leader Education Program (Hiroshima Initiative) for Renaissance from Radiation Disaster (hereinafter, “Phoenix Leader Education Program”) has aimed to foster global leaders (Phoenix Leaders) who can properly address radiation disaster based on extensive interdisciplinary expertise, and lead recovery efforts based on appropriate judgment and action, as well as a clear vision, and play leading roles in the international community. Since FY2017 sees the expiration of the seven-year support period by MEXT for the Program for Leading Graduate Schools, in FY2018 and beyond Hiroshima University will continue to operate the Program at its own expense.

Thus far, the Program has benefited from the many improvements made based on the evaluations and advice from the External Evaluation Committee members. As a result, last year the Program earned a high rating of 3.88 on the four-point scale in the external evaluation. This year, too, the Program has achieved many positive results, through which we are able to confirm that the Program has achieved its purpose. In FY2017, we saw seven students complete the Program. Currently, these graduates, as well as two alumni who graduated in FY2016, are fulfilling their roles with a sense of mission as Phoenix Leaders. We have also established a system under which Program graduates and third to fifth year students accompany second-year students to the Short-term Fieldwork in Fukushima, to provide instruction and guidance to these current students. In this manner, human resources nurtured through the Program now participate in education for the next-generation Phoenix Leader candidates. This is one of the most important achievements of the Program. The Program accepted a total of seven new enrollees from Indonesia, the Philippines, and Japan: two on the Radiation Disaster Medicine Course; three on the Radioactivity Environmental Protection Course; and two on the Radioactivity Social Recovery Course. These enrollees include practicing medical doctors, as in the previous fiscal year. We are confident that the Program will be able to continue producing diverse human resources who can widely contribute to the world, while remaining committed to strengthening radiation protection and preparedness especially in Asia.

We have also further promoted exchanges with international institutes and overseas organizations. In February 2017, Hiroshima University struck an academic and educational exchange agreement with “Le Centre d'étude sur l'Evaluation de la Protection dans le domaine Nucléaire” (CEPN), or the Nuclear Protection Evaluation Centre, France, which was followed by the opening of the CEPN - Hiroshima University Radiation Disaster Recovery International Cooperation Center. In November of the same year, our University concluded a comprehensive agreement on academic and educational exchange with the University of California, Berkley. Additionally, we signed a memorandum of agreement (MoA) with ICRP, establishing a system to mutually promote education regarding radiation protection activities. Furthermore, we had many more occasions to explain the Program to university delegations coming from overseas countries to Hiroshima University, resulting in the admission of one enrollee from among the

delegations. Also in Japan, we were pleased to receive plenty of support based on agreements with various institutes and entities, including Fukushima University, Fukushima Medical University, Nagasaki University, the Radiation Effects Research Foundation, the National Institutes for Quantum and Radiological Science and Technology, the National Institute of Advanced Industrial Science and Technology, and Minamisoma City. Thanks to their support, the Program students have found many opportunities to access up-to-date information on radiation disasters.

This Self Study Report describes the results of the self-evaluation of Program activities, according to 22 points of nine criteria, as well as progress and improvements we have made to address the issues identified in the previous year's external evaluation. As for Point ① of Criterion 5, although it earned a perfect rating of 4 out of 4 in the external evaluation last year, we received a great deal of advice and suggestions on it. We therefore voluntarily identified issues and strived to make further improvements to the Program. We sincerely hope that the External Evaluation Committee members will offer us sound advice based on this Report. While heeding this valuable advice, we intend to further improve this human resource development program in a manner that can live up to the expectations of stakeholders around the world. We look forward to your unreserved evaluation and advice.

January 2018

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Vice President of Hiroshima University

Contents

Ⅰ. List of Issues from results of External Evaluation in Last year

We extracted four issues referred to in Point ② of Criterion 2 that had scored an average rating below 3.5 out of 4 in the Phoenix Leader Evaluation Program External Evaluation FY2016, based on comments made by evaluators. We then attempted to improve the Program's activities related to these issues in FY2017. This year, although the average rating for Criterion 5 was very high, we received a lot of advice and suggestions on this point. We therefore voluntarily identified issues based on evaluators' comments on Point ① of Criterion 5 as well as the Overview, and made improvements to address these issues to enable further development of the Program. The status of improvement for each issue is described in the section on the related point for each criterion.

Issues related to criteria and points that received a rating below 3.5

No	Issue	Criterion	Page
1	To improve the international recognition of the value of an academic degree from this program.	Criterion 2 Point ②	7
2	To organize a long term support structure (career path, place for exchanging information) for graduates.	Criterion 2 Point ②	7
3	To encourage the acquisition of licenses, certifications, etc., that are issued and recognized by public organizations both inside and outside of the country. These qualifications would be of help to students in selecting a career path after their graduation.	Criterion 2 Point ②	7
4	A contingency plan should be in place in case the funding for the new program is not immediately approved.	Criterion 2 Point ②	7

Voluntarily identified issues

No	Issue	Criterion	Page
5	Internships need to be designed as on-site education to provide students the opportunities to clearly understand that the purpose of the Phoenix Leader Education Program is to nurture leaders who are able to promote radiation disaster recovery efforts.	Criterion 5 Point ①	18
6	To adopt more practical internship opportunities that will enhance the career options of the students (on site for disaster recovery, government offices responsible for disaster prevention, etc.).	Criterion 5 Point ①	18
7	To create opportunities for students to make presentations about their research results to the general public using language that can be understood by everyone.	Criterion 5 Point ①	18

8	To improve students' ability to engage in dialogue with the local inhabitants affected by the Fukushima accident.	Criterion 5 Point ①	18
9	To collate a list of target institutions and employers that may offer positive career opportunities for program graduates. Once this list is compiled, identify the requirements for jobs at these institutions and make this available for current students. This would include a list of	Criterion 5 Point ①	18
10	To improve internship benefits for the students by coordinating in advance their participation at a time that coincides with any major training, conference and/or projects occurring at the institution where they will be interning.	Criterion 5 Point ①	18
11	To plan discussions and seminars on both international and domestic law.	Criterion 5 Point ①	18
12	The students should attend/observe a large national or international nuclear power plant exercise.	Criterion 5 Point ①	18
13	To promote research with a transdisciplinary approach.	Criterion 5 Point ②	23

II. Evaluation of individual criteria

In this self-evaluation report, the activities and achievements of the Program are evaluated based on specific points set under nine criteria. With regard to the 13 issues identified by the External Evaluation FY2016 (described earlier), the status of improvement is reported in connection with the related points of each criterion. The description of each evaluation is followed by a list of major reference materials, which are provided as concrete grounds for the evaluation. These reference materials are contained in “Reference Materials for Self-Study Report FY2017”. The numbers of the “major reference materials” listed in this self-evaluation report corresponds to those in the “Reference Materials for Self-Evaluation Report FY2016”.

Criterion 1. Purpose of the Program

Point: Does the purpose of the Phoenix Leader Education Program（Hiroshima Initiative）for Renaissance from Radiation Disaster （hereafter “the Program”）comply with the purpose of the Leading Program in Doctoral Education, sponsored by the Ministry of Education, Culture, Sports, Science and Technology（MEXT）: fostering leaders who have a broad perspective and creativity and who will be active in global academic, industrial, and governmental arenas?

【Explanation and Analyze the Situation】

Since its adoption by the MEXT “Program for Leading Graduate Schools,” the Program has aimed to develop “Phoenix Leaders,” or global leaders who have the judgment and behavioral abilities to take appropriate action in circumstances of radiation disaster and lead recovery with a clear philosophy and innovative knowledge across disciplines. To this end, we have established a new academic field called “Radiation Disaster Recovery Studies,” which enables a multidisciplinary approach ranging from medicine to environmental studies, engineering, science, social science, education and psychology.

In FY2014, this Program, which was accepted as one of the 2011 Programs for Leading Graduate School, underwent an interim evaluation by the JSPS* Committee for Program for Leading Graduate Schools. In March 2015, the Program was assessed as “Category A: Efforts have been made in accordance with the plan and if ongoing efforts are continued, it is expected to achieve the purpose of the Program”.

Since then we have continued working to embody a transdisciplinary approach to cultivating human resources who can improve the collaboration during recovery from a radiation disaster between the people involved, including stakeholders, beyond the boundaries of academic fields and across the industrial, academic and governmental sectors. Since September 2016, the Program has produced graduates who are playing active roles that meet the purpose of the Leading Program in Doctoral Education: fostering leaders who have a broad perspective and creativity and who will be active globally in academic, industrial, and governmental arenas. This exemplifies the Program’s achievements made through the above efforts. These alumni are now giving back to society what they learned through the Program by, for instance, serving as lecturers at symposiums and other events hosted by the Program, and participating in providing guidance for current students in the Program.

In FY2017 the program also underwent a post-project evaluation carried out by JSPS, which resulted in the proposal that was released in December 2017. It was a “Category A: Original plan has certainly been implemented and completion of purpose of the program is recognized with clear achievement.”

【Reference Materials】

21 Interim evaluation results
41 Presentation material of graduate

Criterion 2. Implementation Structure

Point ①　Does the Program have guidance and student-support systems appropriate for achieving its purpose?

【Explanation and Analyze the Situation】

To offer interdisciplinary research guidance, the Program has a guidance system whereby each student has at least four advisors: one primary advisor and at least one co-advisor from each of the three courses.

Additionally, the Program provides students with opportunities to receive guidance and advice on daily occasions such as classes and report meetings, with the participation of researchers from institutes outside the University as Program members including Fukushima University, Fukushima Medical University, Nagasaki University, Tohoku University, National Institutes for Quantum and Radiological Science and Technology, and Radiation Effects Research Foundation. This guidance system based on cooperation across different graduate schools and organizations has enabled the Program to offer education that complies with its purpose of fostering "excellent students who are both highly creative and internationally attuned, and who will play leading roles in the academic, industrial and governmental sectors across the globe," through interdisciplinary omnibus lectures and practical training.

Moreover, the Program aims to establish Radiation Disaster Recovery Studies, which is a new interdisciplinary academic field transcending the conventional framework of academic disciplines, and to foster specialists in this new field. To this end, experts who are active on the front lines in radiation disaster recovery are invited as visiting faculty members to teach compulsory subjects and compulsory elective subjects, both of which form common studies for students on the three courses in the Program.

The Program also offers substantial guidance from leading experts working in the international arena. Distinguished visiting professors have delivered classes and seminars, specifically: Dr. Rethy Kieth Chhem (since FY2014), the then Director of the Division of Human Health at the International Atomic Energy Agency (hereafter, "IAEA") and current Executive Director of the Cambodia Development Resources Institute, Dr. May Abdel-Wahab (since FY2016), the current Director of the Division of Human Health at IAEA, and Dr. Jacques Lochard, Vice Chair of the Main Commission of the International Commission on Radiological Protection (hereafter, "ICRP").

In FY2017, we appointed an expert from Toshiba Medical Systems Corporation as a visiting professor, thereby strengthening the system under which students can learn through joint research with a company. We are planning to expand and reinforce this system.

Also in the same fiscal year, four experts working at the forefront of disaster

recovery in Fukushima were invited as visiting faculty members to provide guidance in Short-term Fieldwork, which is compulsory for first-year students. Dr. Momo Kurihara (Phoenix Leader Education Program Alumna, and Post-Doctoral Researcher at the National Institute of Advanced Industrial Science and Technology [AIST]) provided guidance as a visiting lecturer. In this way, we have established a system under which experts in Radiation Disaster Recovery Studies nurtured by the Program can participated in giving students guidance, to utilize the Program's educational outcomes, in turn, to educate people of the next generation. We believe that the establishment of this system indicates that the Program has reached a certain point of completion.

While setting up the guidance and support system that enables the Program to achieve the above purposes, we have maintained a system to carefully support the growth of every student. The Program has supported students' interdisciplinary learning activities by adopting a system in FY2014 whereby teaching mentors, student's consultant mentors (staff members) and SENPAI (senior student) mentors provide individual consultations, and by starting to hold lunch meetings with mentors and students in FY2015. Worthy of special note is that, in October 2017 in anticipation of the conclusion of MEXT funding support for the Program at the end of FY2017, we held a briefing on the Program for students and a follow-up lunch meeting. These events were intended to allow students to continue learning on this Program with stable future prospects even after April 2018.

【Reference Materials】

23 List of Academic Advisers
22 List of the faculty members (★ for the new members)
24 List of Part-Time Lecturer (★ for the new members)
33 List of Lunch Meeting
10 Short-term Fieldwork program
48 Mentor Handbook 2017

Point ②	**Does the Program have planning, operating, and partnership-building systems appropriate for achieving its purpose?**
	Issue 1: To improve the international recognition of the value of an academic degree from this program.
	Issue 2: To organize a long term support structure (career path, place for exchanging information) for graduates.
	Issue 3: To encourage the acquisition of licenses, certifications, etc., that are issued and recognized by public organizations both inside and outside of the country. These qualifications would be of help to students in selecting a career path after their graduation.
	Issue 4: A contingency plan should be in place in case the funding for the new program is not immediately approved.

【Explanation and Analyze the Situation】

The Hiroshima University Leading Program Organization (hereinafter, "the Organization"), with the University's President as Director, has succeeded in continuing to systematically manage and operate the Program. The Leading Program Organization Steering Committees as the Organization's consultation body, with the participation of all the graduate school deans of Hiroshima University, is in charge of making decisions on important issues, including successful examinees in entrance examinations, Qualifying Examinations (hereinafter "QE"), successful candidates for program completion, and financial aid measures for students .

The Program has nine committees that are responsible for designing and implementing plans and other matters related to the planning and operation of the Program. Before the plans designed by each committee are implemented, their contents are discussed in accordance with the relevant rules at the Program Members' General Meeting, in which all Program faculty members participate. In FY2017, as in the past, all committees proposed many issues at the Program Members' General Meeting, and the approved plans were executed in a consistent manner. Participants in these nine committees and the Program Members' General Meeting included members from the six external institutes mentioned in the section on Point ② of Criterion 2, ensuring open implementation of the Program.

In response to Issue 1, "To improve the international recognition," the Program continues to strengthen its international cooperation system. To begin with, Hiroshima University participated in an international joint research project funded by the European Commission, called "SHAMISEN—Nuclear Emergency Situations: Improvement of Medical and Health Surveillance" (http://www.crealradiation.com/index.php/en/shamisen-home). In May, our University served as a host institute for an IAEA international conference, "Consultancy Meeting on Science, Technology and Society Perspectives on Nuclear Science, Radiation and

Human Health – The International Perspective." We have also been active in promoting collaboration with institutes outside Japan. In February 2017, Hiroshima University signed an agreement on academic and educational exchange with Le Centre d'étude sur l'Evaluation de la Protection dans le domaine Nucléaire (hereafter, CEPN), France's Nuclear Protection Evaluation Centre. Based on the agreement, the CEPN - Hiroshima University Radiation Disaster Recovery International Cooperation Center was set up, which functions as the base for human resources development in France. In November 2017, Hiroshima University concluded a comprehensive agreement with the University of California Berkeley, with which the University has a previous history of research and academic exchange, to reconfirm continued collaboration in education and research. Additionally, our University signed memorandums of agreement (MoAs) with ICRP, Fukushima Medical University and Nagasaki University to ascertain that the University and these institutes would maintain and develop their collaboration. We also intensified our efforts to recruit overseas students, primarily from Asia. In FY2017, we accepted a delegation comprising 23 students and two faculty members from La Trobe University in Australia, and a delegation of four faculty members from Politeknik Harapan Bersama, a private institute of technology in Indonesia. Our faculty members and students deepened their interactions with their counterparts from these foreign institutes. These delegations were given explanations about the Program and its entrance examination procedures. Furthermore, to ensure the program's growing prestige nothing could be more effective than to have graduates from the Program actively working around the globe. These graduates are proving the value of an academic degree from this program with its ability to open up career paths beyond national borders. With the above steady record of accomplishment, the Program succeeded in improving its international recognition.

With regard to Issue 2 "To organize a long-term support structure (career path, place for exchanging information) for graduates," we provided Program graduates with opportunities to continue to exchange information with participants from major institutes involved in radiation disaster-related issues in Japan and overseas at international symposiums hosted by the Program. For example, Program graduates participated as invited speakers at the 6th International Symposium in February 2017 and in the 3rd International Symposium of Phoenix Leader Education Program Industry-Academia-Government Consortium for Human Resource Development in September 2017. We also gave Program students the opportunity to take part in the 7th International Symposium in January 2018 as speakers and commentators, and to enjoy interaction with experts from various fields. These symposiums furnished precious occasions to demonstrate the significance and strength of the Program and the

achievements made by its graduates and current graduate students. In fact, these events served as a catalyst for some graduates to find employment. As part of our daily support for Program graduates, we support them in registering their profiles in online databases of PhD holders. Since FY2017, all current graduate students and graduates of the Program have registered their profiles in the Young Researchers' Portfolio (HIRAKU-PF) run by the Hiroshima University Global Career Design Center jointly with other universities and companies, and in the Doctoral Human Resources Database (JGRAD) operated by MEXT. In this way, the Program facilitates matching between former and current Program students and companies and institutes in need of doctoral human resources.

Issue 3 is "To encourage the acquisition of licenses, certifications, etc., that are issued and recognized by public organizations both inside and outside of the country." Most enrollees in the Radiation Disaster Medicine Course have already been state-certified as medical doctors, dentists, medical physicists, etc. Moreover, faulty members on each course have encouraged their students to acquire licenses and certifications that are deemed to be helpful in building up their career paths after graduation and provided them with relevant guidance. Some students on the Radioactivity Environmental Protection Course succeeded in acquiring certification as first-class radiation protection supervisors, and others passed national service examinations. Students on the Radioactivity Social Recovery Course are working to obtain qualifications as JPA Certified Psychologists.

Issue 4 states "A contingency plan should be in place in case the funding for the new program is not immediately approved." In view of the conclusion of MEXT funding support for the Program in March 2018, we are making preparations to apply for the iCODE Program (Program for inter-institutional, inter-sectional Collaboration on innovative Doctoral Education) (provisional), a new competitive funding scheme. On the other hand, we have developed an operating policy that will enable the Program to continue running within the University's budget. As new support measures, Hiroshima University is planning to inaugurate a scholarship program and a system that will allow reductions in and exemption from tuition fees that have been collected so far. Also, the Program will continue to provide housing support for students, and assist them in participating in practical education, by covering travel expenses for fieldwork and internship programs, which are compulsory subjects. We will secure the Program's dedicated teaching staff from within the faculty of the University, and establish the guidance and support system to continue to foster Phoenix Leaders from a long-term perspective, based on our achievements.

In FY2017 the Program was able to improve the education it offers, with greater

support than before from partner organizations. We have close coordination with the Research Base for Radiation Accidents and Medical Science, jointly set up by three universities—Fukushima Medical University, Nagasaki University, and Hiroshima University, the last of which serves as the central institute. Program students participated in symposiums hosted by the Research Base, at which they deepened exchange with participating experts. Even outside the University, many opportunities were given to Program students. In April 2017, based on the past exchange track record, two students were invited by Colorado State University to participate in the Central Rocky Mountain Chapter of the Health Physics Society annual technical meeting, held in the United States. In August, first-year students gained an opportunity to present their achievement in the compulsory subject "Short-term Fieldwork" at an international conference hosted by IAEA and Fukushima Medical University. In organizing the fieldwork, Minamisoma City, with which the University has concluded an agreement, helped us with coordination and liaison, and provided us with the workshop venues and accommodation for students. In September, we received financial assistance from Chiyoda Technol Corporation to send one of its employees who is studying as a student on the Program to IAEA to undergo a six-month internship. In November, Program students attended the Dialogue, an assembly to talk with local residents, held by the NPO "Ethos in Fukushima," ICRP, etc. Participating students had opportunities to learn about situations involved in recovery from the radiation disaster from meeting in person with many experts and stakeholders engaged in reconstruction efforts in Fukushima. We believe that we can continue to offer our students many opportunities under this collaboration system in the future.

【Reference Materials】

25 Annual Plan FY2017
26 Agenda List of the Hiroshima University LP Organization Steering Committee
27 Agenda List of the Program Members' General Meeting
31 STS Meeting Agenda (May, 2017)
29 Exchange Meeting Report (La Trobe University)
30 Exchange Meeting Report (Politeknik Harapan Bersama)
43 List of employment and target employers
55 Flyer & Program_the 6th International Symposium
57 Flyer & Program_the 7th International Symposium
54 Program, 3rd Symposium for Industry-Academia-Government Consortium
42 Webpage screenshot on Young Researchers Portfolio, "HIRAKU-PF"

28 Handouts of Explanatory Meeting for Financial Support

11 Short-term Fieldwork report

62 The 18th SFV, 9thGFV Report

Criterion 3. Program Members and Education Supporters

Point ①	**Does the Program have a clear policy to build an organization of faculty members? Does it clarify the responsibilities of respective members for education and research activities?**

【Explanation and Analyze the Situation】

The Program maintains a research guidance system whereby every student has at least four advisors comprising one primary advisor and at least one from each course (including advisors other than Program Members), and an education system for implementing the curricula with the participation of external partner academic institutions and organizations.

The Program also offers classes taught by leading researchers and professionals in radiation disaster recovery from outside the University, who serve as part-time lecturers in the Program. To help these external lecturers share understanding of the positioning and goals of their classes with each other, in FY2015 we improved the Teaching Handbook and added to it a Curriculum Map, which clearly illustrates the learning objectives and goals of each class. Additionally, in FY2016, we revised the Teaching Handbook again in the wake of the curriculum revision, and reconfirmed the positioning of each class and the systematic structure of the curricula at the 8th Education Seminar.

In FY2017, we appointed new faculty members to the Program to provide more support for students' research contents and hopes for their future career paths. Specifically, teaching staff from the Graduate School of Biosphere Science were assigned to the Radioactivity Environmental Protection Course, and teaching staff from the Graduate School of Social Sciences and the Graduate School of Biomedical & Health Sciences to the Radioactivity Social Recovery Course. These new faculty members are now responsible for providing guidance to students, as primary advisors or co-advisors.

【Reference Materials】

23 List of Academic Advisers

22 List of the faculty members (★ for the new members)

59 Flyer_ the 8th Educational Seminar

05 Teaching Handbook 2017

Point ②　Does the Program have faculty members capable of achieving the purpose of the Program: to foster Phoenix Leaders, Who will conduct interdisciplinary and integrated management of recovery programs in regions suffering from complex damage caused by radiation disasters?

【Explanation and Analyze the Situation】

In addition to establishing an interdisciplinary guidance system within the University, the Program provides students with the guidance of external experts in radiation and radiation disaster recovery across different organizations and countries. Annual international symposiums, which unite these experts, offer opportunities to confirm the achievements of the Program through presentations made by students and speakers' discussions.

The Program offers classes and seminars delivered directly by world-class experts in the fields of radiation disaster medicine and radiation protection. Chief among them are Dr. Rethy Kieth Chhem (former Director of the Division of Human Health at the IAEA, and the Executive Director of the Cambodian Development Resources Institute), Dr. May Abdel-Wahab (current Director of the Division of Human Health at the IAEA), and Dr. Jacques Lochard (Vice Chair, the Main Commission of ICRP), who are all serving as visiting professors. Learning firsthand from these international leaders in radiation disaster recovery has motivated students not only to acquire valuable knowledge, but also to clarify their own objectives and the tasks to be addressed.

Following the 2nd International Symposium of the Phoenix Leader Education Program Industry-Academia-Government Consortium for Human Resource Development in February 2017, the 3rd event of its kind, was held in September in the same year. We invited a divisional director from Toshiba Medical Systems Corporation to give a lecture at the 3rd Symposium. He was then appointed as a visiting professor in the Program. These activities strengthened our education and research system as well as our students' career development support system, based on collaboration between industry, academia and government.

【Reference Materials】

57　Flyer & Program_the 7th International Symposium
22　List of the faculty members (★ for the new members)
24　List of Part-Time Lecturer (★ for the new members)
54　Program, 3rd Symposium for Industry-Academia-Government Consortium

Criterion 4. Status of Accepting Students

Point ① Does the Program have a definite policy and criteria for admitting students? Does the University Publicize those criteria?

【Explanation and Analyze the Situation】

We created a student recruitment pamphlet and application guide for admission for October 2017 enrollees (for the secondary registration) and October 2018 enrollees, which spell out the educational goals of this Program, what type of students we seek, our basic policy for student selection, and our admissions policy. We not only sent these documents to universities in Japan and abroad, related organizations and Program Members but also posted them on the Internet to broadly share information about admissions. We also conducted domestic PR activities, including briefings on the Program and the entrance exam, at the University and its Tokyo office.

Efforts are also underway to develop human resources, an activity that the Program should put special emphasis on. In FY2016, we set up the Special Quota of Physicians Protecting Human Lives from Radiation Disaster, to nurture doctors who can take charge of radiation disaster medicine. We also sent the student recruitment documents to faculty members of the Division of Disaster and Radiation Medical Sciences (Master's Degree) to inform its Master's students and graduates of the Phoenix Leader Education Program. This Division is a joint graduate school that was established by Nagasaki University and Fukushima Medical University for radiological technologists, hygienists and nurses. In HU, we appointed a professor from the Division of Nursing Science in the Graduate School of Biomedical & Health Sciences as a new faculty member in the Program, bolstering collaboration with the field of nursing science.

We accepted three Indonesian delegates (with a total of 46 members) to the University in FY2016 to strengthen our educational efforts to cultivate experts in radiation disaster recovery in Asia, and held briefing meetings with them, resulting in the admission of one enrollee. In FY2017, while continuing to accept Indonesian visitors, we also called for applicants for the Program at an event to deepen exchange between Hiroshima University and La Trobe University, Australia.

【Reference Materials】

35 Flyer_Application Guide for Admission
36 Application Guide for 2018 Enrollment
37 Application Guide for Recommendation Entrance Examination
38 List of Briefing Sessions
40 Questionnaire (media research)

29 Exchange Meeting Report (La Trobe University)

46 List of Research Grant Payments

Point ②　Does the Program employ an appropriate system to select students according to its admission policy? Does the system function well?

【Explanation and Analyze the Situation】

We administered entrance examinations for the primary and secondary registration to select October 2017 enrollees (sixth-term students).

The Program offers matching opportunities between prospective students and faculty members. Before applying, those who are interested can talk in detail with the Program Members they would like to be their primary advisors about their research plan, its validity and so on. We had 31 requests for this opportunity from prospective students, nine of whom applied for the Program.

In the first selection, the documents submitted by applicants (their research plan, academic transcript, grade/score certificate for the Practical English Proficiency Test or other examinations, etc.) were examined. The document screening was conducted by three faculty members, with the Program Members that the examinee would like to be their primary advisor serving as the chief examiner, and the other two as sub examiners. The second selection was made through an oral examination held in English. Applicants gave their presentations on a theme given in advance, and underwent an individual interview and a group interview. The interviews were administered by seven or eight internal members of the Selection Committee and external members from Chugoku Electric Power Co., Inc., and Mitsubishi Heavy Industries, Ltd.

As a result of these selections, three applicants out of four passed from the first registration, and four applicants out of five passed from the second registration. Specifically, the Program admitted a total of seven students: six through the general admissions procedures and one as part of the Special Quota of Physicians Protecting Human Lives from Radiation Disaster. The Radiation Disaster Medicine Course accepted two students, the Radioactivity Environmental Protection Course accepted three students, and the Radioactivity Social Recovery Course accepted two students. Thus, each course was able to admit roughly the same number of students. By nationality, three students hail from Indonesia, two from the Philippines, and two from Japan, so that the Program was able to maintain its diversity.

【Reference Materials】

39　List of Students and Attendees to Briefing Sessions

37　Application Guide for Recommendation Entrance Examination

Point ③ Does the Program have a system to verify that screening methods comply with the admissions policy? Are verification results reflected in improving the screening methods?

【Explanation and Analyze the Situation】

The Entrance Examination Committee of the Program verifies each fiscal year that students are accepted appropriately in accordance with the purpose of the Program, and identifies areas for improvement. Verification results are reflected, as needed, in improving the screening methods and PR activities for the following fiscal year.

In FY2016, the Program introduced a recommendation-based exam quota called the "Special Quota of Physicians Protecting Human Lives from Radiation Disaster." Through this new quota exam system up to October 2017, the Program has admitted two Japanese doctors who are currently employed in the Division of Emergency Medicine at Hiroshima University Hospital, as well as one Japanese dentist. Of these successful applicants, one Japanese medical doctor was accepted via a new system under which the Program selects its October enrollees from among students admitted to the Biomedical Sciences Major at Hiroshima University Graduate School of Biomedical & Health Sciences in April. This student began studying in the Program in October, 2017.

【Reference Materials】

37 Application Guide for Recommendation Entrance Examination

38 List of Briefing Sessions

Criterion 5. Content and Means of Education

Point ①	**Does the Program have systematic curricula appropriate to fulfill its goal and suitable for granting academic degrees? Are the subjects to be taught well arranged in line with the purpose of the Program?**
Issue 5:	Internships need to be designed as on-site education to provide students the opportunities to clearly understand that the purpose of the Phoenix Leader Education Program is to nurture leaders who are able to promote radiation disaster recovery efforts.
Issue 6:	**To adopt more practical internship opportunities that will enhance the career options of the students (on site for disaster recovery, government offices responsible for disaster prevention, etc.).**
Issue 7:	**To create opportunities for students to make presentations about their research results to the general public using language that can be understood by everyone.**
Issue 8:	**To improve students' ability to engage in dialogue with the local inhabitants affected by the Fukushima accident.**
Issue 9:	**To collate a list of target institutions that may offer positive opportunities for employment for program graduates. Once this list is compiled, identify the requirements for jobs at these institutions and make this available for current students. This would include a list of additional license or qualification requirements.**
Issue 10:	**To improve internship benefits for the students by coordinating in advance their participation at a time that coincides with any major training, conference and/or projects occurring at the institution where they will be interning.**
Issue 11:	**To plan discussions and seminars on both international and domestic law.**
Issue 12:	**The students should attend/observe a large national or international nuclear power plant exercise.**

【Explanation and Analyze the Situation】

Last year, Point ① of Criterion 5 was given a perfect rating of 4 out of 4 by all evaluation committee members. We consider this indicates that the Program has fulfilled its educational goals. However, many pieces of advice and suggestions relating to Point ① of Criterion were received from evaluators. We interpreted this as their hope that the Program will continue to develop. Based on the advice and suggestions received, we identified issues to be addressed and took countermeasures.

The Program has organized systematic curricula to ensure that students can acquire the abilities required for Phoenix Leaders through their study subjects. Class instructors design and teach classes referring to the Teaching Handbook and using the Curriculum Map and Rubric (guidelines for achievement criteria) to confirm the positioning of each class and evaluation criteria. We revised the curricula in FY2016 and FY2017, aiming to maintain and develop the Program after MEXT ends its support,

and added three special subjects to the Radioactivity Social Recovery Course. The revisions and additions were promptly reflected in the Curriculum Map and the Teaching Handbook.

In addressing Issue 5, we have increased the number of internships at companies and other organizations that contribute to recovery from radiation disasters to provide students with opportunities to clearly understand for whom their work is being performed, based on one of the Program's stated purposes—To nurture leaders who promote radiation disaster recovery efforts. Thus far, Program students have gained experience in activities related to recovery from the Fukushima nuclear power plant disaster through internships: two students on the Radioactivity Environmental Protection Course have done their internships at Chiyoda Technol Corporation, one student on the Radioactivity Environmental Protection Course at Penta-Ocean Construction Co., Ltd., and one student on the Radioactivity Social Recovery Course at the Minamisoma City General Hospital. Additionally, one student on the Radioactivity Environmental Protection Course participated in organizing an international conference hosted by ICRP as well as the Dialogue event held in Fukushima. Being involved in the activities of an international organization helps students to learn how to communicate more efficiently with local residents in the affected areas.

In response to Issue 6, "To adopt more practical internship opportunities that will enhance the career options of the students," one Program student who works for Chiyoda Technol Corporation was given the opportunity for a long-term internship at IAEA, funded by their company. We will continue to develop internships that match the accepting organization's expectations of the Program, and this will lead to enhanced career options for the students.

Issue 7 is "To create opportunities for students to make presentations about their research results to the general public using language that can be understood by everyone." In response, the Program trains students to convey specialized knowledge to everyone on various occasions. In October 2017, the 4th Cross-disciplinary Exchange Forum of the Program for Leading Graduate Schools was held, with the participation of graduate students from outside the Program, from Hiroshima University and other universities. At the forum, discussions took place on the theme of "Industry-Academia-Government-Citizen Collaboration in Disaster Recovery." The forum was followed by a retreat, at which each individual student presented their ideas on collaboration with different fields. In this way, Program students are required to hold discussions across the borders of their specialized fields, practicing how to convey their views to their counterparts in an easy-to-understand manner. Radiation Disaster Recovery Studies is a compulsory subject that is regarded as the culmination of the Program studies.

Ultimately students are required to present their research achievements at the debriefing session and the doctoral degree examination in a way that will allow them to be understood even by examiners in fields other than their own.

In response to Issue 8 "To improve students' ability to engage in dialogue with the local inhabitants affected by the Fukushima accident," Program advisors have advised us that the content of the Short-term Fieldwork, which is compulsory for first-year students, should be improved to enable them to learn more from local residents in the affected areas. Following this advice, in FY2017 we revised the content to place the focus on regional surveys, including dialogue with local inhabitants. Specifically, before the fieldwork, students learned basic knowledge, such as the situation in Fukushima and how to interview local inhabitants, through lectures held in Hiroshima. On the fieldwork site, students were divided into three groups, each of which visited different areas for two days, and concentrated on surveys primarily through dialogue with local residents. Experts and NPO staff members with a wealth of experience joined the on-site guidance for students, enabling them to learn practical interview methods that were appropriate to the situation. After these surveys, the three groups of students listened to the results together several times, and reflected upon their own achievements. Wrapping up the Short-term Fieldwork under the guidance of Dr. Jacques Lochard of ICRP, students held discussions in the manner of a Dialogue, an assembly organized by ICRP to talk with local residents. In so doing, students were able to learn empirically about the ideal form of local resident-centered dialogue.

Issue 9 is "To collate a list of target employers that may offer positive opportunities for employment for program graduates. Once this list is compiled, identify the requirements for jobs at these institutions and make this available for current students. This would include a list of additional license or qualification requirements." In response to this issue, the Career Path Committee played a central role in creating the list, by collecting and collating relevant information, together with instructors from each course. Information on future career paths will be provided to students via Bb9, which is the Learning Management System of the University, and by other means. In addition, Hiroshima University has set up a Global Career Design Center, which supports doctoral course students in finding employment from a university-wide standpoint. The University also serves as the Lead Partner Organization for Home for Innovative Researchers and Academic Knowledge Users (HIRAKU)—an industry-government-academia consortium comprising national, prefectural, municipal and private universities as well as companies in the Chugoku and Shikoku regions—established under a MEXT program with the goal of promoting the effective use of doctoral program graduates in real-world settings. Capitalizing on the university-wide

career support system, we provide Program graduates with continuous support in designing their careers.

In addressing the need to "coordinate in advance students' participation at a time that coincides with any major training, conference and/or projects occurring at the institution where they will be interning" stated in Issue 10, students are given various opportunities by those institutions. In FY2017, during the CEPN internship, students were given opportunities to participate in seminars and international symposiums organized by CEPN, the European Committee, and ICRP. These students were aware that they acquired information sources that would be important for their future careers. During their internship in IAEA, one student underwent a one-month internship (August 28 to September 29) at the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, with the chance to be involved in the development of DSS4NAFA (Decision Support System for Nuclear Emergencies Affecting Food and Agriculture), a decision-making support system on the Internet. The student also took part in the Climate-Proofing Rice Production Systems: Nuclear Techniques for Climate Change Adaptation, which was a side event at the 61st IAEA General Conference. At this event, the student, who hailed from Vietnam, became acquainted with the Director General of the Vietnam Atomic Energy Agency. After returning home, the student was invited to a workshop hosted by the Agency.

In response to Issue 11 "To plan discussions and seminars on both international and domestic law," in March 2017 the Program organized a seminar titled "The work of the Nuclear Regulation Authority, IRRS (Integrated Regulatory Review Service) held in January 2016 by IAEA, and measures to be taken including amendments to legislation," inviting Mr. Masatsugu Isse, Senior Specialist for international Radiation Policy at the Nuclear Regulation Agency, as the lecturer.

To address Issue 12 which points out that "The students should attend/observe a large national or international nuclear power plant exercise," we implement continual field visits, etc. Every year, we hold a two-day tour to see the facilities of the Japan Atomic Energy Agency (JAEA). At its Oarai Research and Development Center, students study the structures of three types of testing reactors: the JOYO experimental fast reactor, the High Temperature Engineering Test Reactor (HTTR), and the Japan Materials Testing Reactor (JMTR). During the study tour, they also experience simulated station blackout conditions. During the visit to JAEA's Nuclear Emergency Assistance and Training Center, we offer them the opportunity to learn about the system to convene nuclear specialists in the event of an emergency to cope with a disaster in cooperation with central government agencies and disaster response experts. From the next fiscal year we are planning for students to participate in the nuclear

emergency drill conducted by Shimane Prefecture, which is home to the Shimane Nuclear Power Station, so that they will be able to experience a more practical and large-scale exercise. The Program continues to offer students training in nuclear disaster emergency medicine at the Radiation Emergency Assistance Center/Training Site (hereafter, REAC/TS), the Oak Ridge Institute for Science and Education. In FY2017, six students participated in the training.

【Reference Materials】

05 Teaching Handbook 2017
02 Code on the Curriculum Map for the Phoenix Leader Education Program
03 Effort and Achievement Rubric for the Phoenix Leader Education Program
01 By-Laws for the Completion of the Phoenix Leader Education Program
09 Short-term Fieldwork Schedule
11 Short-term Fieldwork report
43 List of employment and target employers
12 List of Internship
63 The 20th SFV Guide

Point ②	**Does the Program have means to guide students of diverse backgrounds to the goal of obtaining degrees? Does the Program have means to allow students to confirm their achievement levels?**

Issue 13: To promote research with a transdisciplinary approach.

【Explanation and Analyze the Situation】

We have an online system for supervising interdisciplinary coursework (systematic subject registration) and research work under the guidance of instructors in different fields. Assignments of all classes are given and performed via the class support system Bb9. We also distribute learning e-portfolios to students, to supervise their achievements towards their goals and objectives. The learning e-portfolio, designed based on the Curriculum Map and Rubric, shows each student's level of achievement based on his/her academic record, the number of earned credits, and the papers he/she has written. Students can upload their assignment papers for classes via Bb9 onto the Learning e-Portfolio. This entire online system helps each student manage his/her own learning, and enables his/her primary advisor and co-advisors to provide him/her with effective and efficient guidance, while checking his/her level of goal achievement.

One of the main features of our learning process supervision system of degree conferment, is the manner in which we administer the QE in the third semester for four-year-course students and in the fourth semester for five-year-course students. These results are used to measure their levels of achievement and decide whether they are qualified to continue attending the Program. We have administered eight QEs as of September 2017, and all 29 examinees have successfully passed. The QE contains written tests on expertise in multiple disciplines, an oral exam in English on each student's written research project, and an aptitude and capability test based on the learning e-portfolio.

From FY2016, we decided that students in "Radiation Disaster Recovery Studies," which is a compulsory subject in the final stage of the Program, must write a "Radiation Disaster Recovery Studies Report" as the final product of their studies in the Program, and make a presentation at the Radiation Disaster Recovery Studies Report Meeting, which effectively serves as an examination in public for the program completion, the results of which are used as a requirement for the credits in the subject. Up to September 2017, nine students have earned credits in Radiation Disaster Recovery Studies, and obtained doctoral degrees. All the Radiation Disaster Recovery Studies Reports written by these students have been published on the website (http://phoenixprogramlp.hiroshima-u.ac.jp/en/activity-reports/) .

In addressing Issue 13, "To promote research with a transdisciplinary approach,"

the Program has since its inception offered multidisciplinary curricula to students in all three courses by making it compulsory for students to take classes related to radiation biology, environmental sciences, management, and the like. The Program has also developed based on a transdisciplinary approach to ensure that we can nurture human resources who are able to collaborate with others across the boundaries of academic disciplines and across the borders of industry, academia, government and society. To be more specific, the Program organized teams each of which comprise several students from different fields. These teams were given an opportunity to experience confronting various complex challenges related to radiation disaster recovery, and identifying and discussing them to find a solution. Students were then required to report on what they experienced to other students and faculty members in various fields. Students use the feedback from these reports to reflect on their handling of the issues and deepen their understanding of the challenges facing radiation disaster recovery and the solutions to them. This method was introduced primarily in Short-term Fieldwork, a compulsory Program subject. In the process of planning and implementing the fieldwork, we received extended advice from Visiting Professor Jacques Lochard from ICRP. After more than ten or so hours of preliminary studies involving attending preparatory seminars and making fieldwork plans, participating students started gathering information in Fukushima, including interviewing local residents and conducting environmental surveys.

【Reference Materials】

05 Teaching Handbook 2017
02 Code on the Curriculum Map for the Phoenix Leader Education Program
03 Effort and Achievement Rubric for the Phoenix Leader Education Program
01 By-Laws for the Completion of the Phoenix Leader Education Program
06 Guideline on the Learning e-Portfolio Operations
08 Qualifying Examination Implementation Procedures
07 Guide to Implementing Qualifying Examination
14 Code on Implementing Radiation Disaster Recovery Studies
15 Syllabus of Radiation Disaster Recovery Studies
10 Short-term Fieldwork program
11 Short-term Fieldwork report

Point ③ Does the Program have advanced educational functions sufficient to offer high-level practical curricula?

【Explanation and Analyze the Situation】

This Program offers education based on the latest results of the most advanced research and practices in the field of radiation disaster recovery through classes taught by not only the university's faculty members but also external researchers and professionals appointed as part-time lecturers, all of whom lead this field. In FY2017, we succeeded in providing students with the opportunity to directly learn about reconstruction efforts by inviting Dr. Jacques Lochard, Vice-Chair of ICRP Main Commission, to teach a class on the compulsory subject "Large-scale disaster and international cooperation" as a Visiting Professor.

The Program also continuously offers learning opportunities at important research institutions specializing in radiation and radiation disaster recovery and in disaster-affected areas. For example, we continue to send students to the REAC/TS to receive advanced practical training and we sent six students in FY2017. Field visits to nuclear power stations and radiation-related research institutes serve as important learning opportunities for students. We also invite experts in the industrial, academic or governmental sectors to speak at retreats or seminars and directly communicate with students. The Program also provides students with financial aid to cover travel and other expenses necessary for participating in domestic and overseas academic conferences, in order to encourage students to learn the most advanced research achievements on their own initiative.

To cap each year's education, this Program holds an annual international symposium. Students play the role of members of the working group for organizing this symposium, and participate in managing it with high motivation. This enables students to acquire skills in international conference management. They can also experience opportunities to not only learn from participating experts about the achievements of advanced research and practices, but also receive feedback on their oral and poster presentations. On the other hand, this symposium functions as a milestone in establishing "Radiation Disaster Recovery Studies" as a new academic field, and has developed to encompass a wider variety of stakeholders from many different fields. Moreover, this symposium gives students a chance to deepen their understanding of radiation disaster recovery and to increase their motivation to be involved in reconstruction.

In FY2017, we expanded Short-term Fieldwork, a compulsory subject, with support from our partner organizations in Japan and abroad. In preparation for the fieldwork, we held five lectures and one study tour to help student to understand the situation in Fukushima and how to interview affected inhabitants. After their preparatory studies, students participated in the fieldwork. In Fukushima, they were divided into three groups, working to clarify the actual situation, identify problems and consider solutions to these problems. They achieved this mainly through interviews with the residents of the areas affected by the nuclear power plant accident, and by other means, such as making radiation measurements, touring the local community, supporting farming, and holding

workshops for high-school students. During the Short-term Fieldwork, each group had an opportunity to present their findings at the Consultancy Meeting on Review and Future of Science and Technology Studies (STS) Curriculum in Japan, co-organized by IAEA and Fukushima Medical University in Fukushima.

【Reference Materials】

13 Syllabus, History of Hiroshima Restoration
52 Application Guide for Training Course of REACTS
60 List of Field visits
64 List of Retreat
58 List of Seminars
57 Flyer & Program_the 7th International Symposium
10 Short-term Fieldwork program
11 Short-term Fieldwork report

Point ④ Does the Program have a mechanism to develop students' communication and negotiation abilities so as to foster active leaders who will address global challenges?

【Explanation and Analyze the Situation】

All compulsory subjects in this Program are taught in English, so students are required to be always ready to communicate with others in English. Additionally, with overseas internship programs and training at REAC/TS, etc., our educational system works well in motivating students to test their own international communication and negotiation abilities and devote their effort to further improving such abilities.

To enhance students' English communication abilities, the program offers the subjects of Scientific English, English Communication, English Rhetoric (scientific writing), and Academic English Presentation, taught by a native English speaking lecturer. These courses are designed to allow students the opportunity to experience contextualized and explicit English content-based language instruction in realistic settings that help prepare our graduate students for communication in a global society. Our full-time lecturer offers all of these classes at the two campuses to which the Phoenix Program students belong. These small group, student-focused and student-driven classes deal with subject specific issues based on the initiative of the participating students.

Building on a foundation of previous successes, the efforts by the Phoenix Leader Education program to ensure that students' English communication ability shows ongoing progress and improvement continue to bear fruit. Some of the more concrete examples of this English language development include: 1) an increase in conference oral and poster presentations; 2) program professors reporting an increase in conversation participation, students' willingness to communicate as well as an observed increase in speaking confidence; 3) a measurable improvement in graduate students' ability to parse and summarize academic papers; and finally 4) students' specific desire to improve the "process" of their writing via the creation of "research area" and "laboratory" specific journal writing templates and vocabulary databases.

From FY2015, students are required to prove their English proficiency with their scores on English proficiency tests or other means, to participate in training or internship programs abroad. This has helped increase students' motivation to learn English, resulting in many students meeting the requirement.

【Reference Materials】

12 List of Internship

16 Syllabi of Lectures in English

17 Phoenix Leader Education Program English Outcomes Report

04 Handling of Evaluation of Learning Achievement of English Education

53 Policies on the language requirements for overseas training

Point ⑤	**Does the Program have appropriate syllabi in adherence with the spirit of curriculum organization and a system to use them effectively?**

【Explanation and Analyze the Situation】

The syllabi of all the subjects are appropriately prepared, and are shown to students not only on the class support system Bb9 but also on the Hiroshima University website since FY2016, in both Japanese and English. On the occasion of the curriculum revision in 2016, we revised the Teaching Handbook, and reconfirmed the connection between classes and the direction of the new curricula at the 8th Education Seminar. In FY2017, we continued to make effective use of the Teaching Handbook to ensure that classes were delivered systematically and in the most appropriate sequence.

【Reference Materials】

59 Flyer_ the 8th Educational Seminar

05 Teaching Handbook 2017

Point ⑥ Is the Program organized with due consideration given to students' autonomy and students who take courses outside their own fields?

【Explanation and Analyze the Situation】

The Program has a thorough learning support system, whereby students can communicate with their advisor and class instructors using the class support system or Learning e-Portfolio wherever and whenever they want. The Program also has a system that enables students to receive advice about their troubles in learning from teaching mentors and senior-student mentors across the course boundaries.

As a form of consideration for Phoenix Program students undertaking independent study, we have rooms with Internet connection and furniture for graduate students' exclusive use. Additionally, to meet the needs of advanced-class students, who seldom have to attend common classes, in October 2016 we opened an Interactive Lab with booths exclusive to individual students, as spaces where students can study hard in friendly rivalry. These exclusive booths are used by students on the Radioactivity Environmental Protection Course for data analysis. Some students use the spaces to voluntarily organize interactive seminars to promote research exchange.

In October each year, we organize a Cross-disciplinary Exchange Forum. At this forum, new students admitted in October listen to lectures given by experts working on the forefront of radiation disaster recovery, and exchange views with other students in the Program and from different universities, transcending the boundaries between academic fields. The forum therefore serves as a venue for new students to understand the purpose and significance of the Program. In FY2017, we invited Dr. Yoshiya Shimada (Executive Director at the National Institutes for Quantum and Radiological Science and Technology) as the lecturer at the 4th Cross-disciplinary Exchange Forum. Three graduate students studying in the Inter-Graduate School Doctoral Degree Program on Science for Global Safety at Tohoku University, and two graduate students studying on the TAOYAKA Program for Creating a Flexible, Enduring, Peaceful Society participated in the event. The forum was followed by a retreat held the next day, in which students stayed together under one roof and enjoyed interdisciplinary discussions.

【Reference Materials】

48 Mentor Handbook 2017

49 Current Situation and Improvement of Student-Owned Space

65 Implementation Procedure_Cross-disciplinary Exchange Forum & Retreat

Point ⑦ Does the Program have and use appropriate means of education for adult students in remote locations, etc., such as conducting classes using printed learning material (including corrections by mail), broadcasting classes, interview classes (including face-to-face classes), and classes using IT media?

【Explanation and Analyze the Situation】

This Program has built a system for continuously supporting students who study in the Program in remote locations while working there. Students living in the Tokyo metropolitan area can attend classes given mainly at Hiroshima University's Tokyo office. To offer tele-education-based classes, we prepared necessary equipment before the Program started: for example, a teleconferencing system for establishing audio-visual connection mainly between Hiroshima University's Higashi-Hiroshima and Kasumi Campuses on the one hand and partner organizations such as Fukushima University, Tohoku University, and the National Institute of Radiological Sciences on the other, and a document camera and other related devices useful for administering written examinations for students in remote locations and other purposes. Additionally, aiming to appropriately assist students in remote locations in independent study before and after their classes, we have provided interactive class education targeted at them, using a content recording and distribution system, which helps these students prepare for and review their classes.

In July 2015, one student on the Program working at a company and living in Tokyo earned the required credits by attending classes via videoconferencing at the Tokyo Office, and taking English classes taught by local part-time instructors. The student received classes and research guidance at Hiroshima University, with financial aid to cover his travel expenses. He also completed the compulsory Short-term Internship while he was on leave through coordination between the Program and the collaborating company. In FY2016, the student completed the Long-term Fieldwork in his spare time, and his advisors accompanied him to the fieldwork site where they provided him with guidance. He then wrote a fieldwork report and gave a presentation at the report meeting. His report content and presentation skills were both highly evaluated. With the above support, the student wrote a doctoral dissertation and a Radiation Disaster Recovery Studies Report, and gave an oral presentation at the Radiation Disaster Recovery Studies Report Meeting. In September 2017, he completed the Program and earned his PhD.

【Reference Materials】

51 Device List for Remote Teaching System

20 List of Long-term Fieldwork

Criterion 6. Outcomes of Education

Point ① Does the Program have an appropriate system to evaluate students' achievement levels in terms of their academic performances and credentials, as well as their progress toward the goal of developing abilities required for Phoenix Leaders?

【Explanation and Analyze the Situation】

This Program has the clearly defined learning objectives and a system for evaluating students' achievement levels based on the outcomes of their learning, and has used this system for the QE.

We use the Curriculum Map and Rubric to evaluate students' levels of achievement of the Program goals, and integrate the entire system ranging from class design to evaluation. Regarding common goals, students are required to reach the second stage of the achievement standards specified in the Rubric by their QE, and to reach the fourth stage by their Program completion.

In FY2016, to promote the achievements of students in the Program, we added the section "Results of students' research" which showcases the research achievements of students on the Program on its website (http://phoenixprogramlp.hiroshima-u.ac.jp/en/activity-reports/), and published academic papers authored by students in the section. In FY2017, along with 27 academic papers, Radiation Disaster Recovery Studies Reports written by nine students were posted, demonstrating the achievements of the Program.

We have also conducted surveys of Program graduates to identify the post-graduation paths of individual students. Graduates' profiles have been registered in the online system so that, even after graduation, the Program uses the resources of Hiroshima University to help students to achieve their desired career paths.

【Reference Materials】

05 Teaching Handbook 2017
02 Code on the Curriculum Map for the Phoenix Leader Education Program
03 Effort and Achievement Rubric for the Phoenix Leader Education Program
18 Student Outcome (website)
42 Webpage screenshot on Young Researchers Portfolio, "HIRAKU-PF"

Point ②　From an analysis of the results of hearing students' opinions, including questionnaires, can it be concluded that the Program has produced favorable educational outcomes?

【Explanation and Analyze the Situation】

We ask students to evaluate the classes provided under this Program, using Hiroshima University's Class Improvement Questionnaire system.

Besides the questionnaire above mentioned, in FY 2017 another questionnaire was sent to students by the JSPS (Japan Society for the Promotion of Science) in conjunction with the post-project evaluation for MEXT's Program for Leading Graduate Schools and results have been made open to HU. Generally, students gave positive opinions of the Program's achievements required by MEXT. However, one concern is that more than half of the students replied to the question on "Laboratory Rotation" that they were not given the opportunity. This is presumably because the title "Laboratory Rotation" may be somewhat misleading, so that its purpose, which is to offer "opportunities to gain specialized knowledge in other fields," was not fully understood. In practice, the curriculum requires students to study special subjects in other academic fields as compulsory subjects, and students are given opportunities to acquire a variety of specialized knowledge through seminars and field visits. Nevertheless, the above concern indicates that the Program has not yet established a common understanding among students that they have opportunities to obtain knowledge in other specialized fields by studying special subjects in different areas and capitalizing on learning occasions outside their classes. In the future, when we offer "opportunities to gain specialized knowledge in other fields" to students, we will always remind them of the purpose, and motivate them to capitalize on these opportunities to acquire knowledge in fields other than their specialty.

【Reference Materials】

34　Questionnaire results on SFW 2016, 2017

Criterion 7. Student Support Systems

Point ① Does the Program offer an ideal environment where excellent students can inspire and compete with each other?

【Explanation and Analyze the Situation】

The Program offers an environment where not only students of the Program but also those from other universities can inspire and compete with each other. Notably, during the compulsory Short-term Fieldwork, students share activities for about one week in Fukushima Prefecture and exchange views. In FY2017, students were divided into three small groups, each of which were accompanied by Program graduates and third to fifth year students, who served as part-time lecturers and TAs. They worked to examine and compile the collected information, even at night. In addition, during the fieldwork period, each group of students had the chance to report on their activities at the international conference organized by IAEA at Fukushima Medical University. To prepare for their presentations, each group worked hard on its own initiative. Participants in the fieldwork included one student from the University of California, Berkeley, and two graduate students from the Hiroshima University TAOYAKA Program for Creating a Flexible, Enduring, Peaceful Society, which was adopted as one of MEXT's Programs for Leading Graduate Schools, as was our Program. The fieldwork served as a venue for mutual inspiration and competition between students.

Students from the University of California, Berkeley, and from Colorado State University participated in the poster session organized by students at the international symposium held in February 2017. Participating students competed for the awards bestowed on the top three presentations as judged by the symposium participants. In October, the 4th Cross-disciplinary Exchange Forum was held. In addition to Program students, two graduate students studying on the TAOYAKA Program for Creating a Flexible, Enduring, Peaceful Society, and three graduate students studying on the Inter-Graduate School Doctoral Degree Program on Science for Global Safety at Tohoku University participated in the event. The forum participants were divided into five groups, each of which presented their discussion results.

By establishing a number of systems to promote teamwork and friendly competition between students, the Program has succeeded in creating an environment that facilitates mutual growth, transcending the boundaries between academic disciplines and differences in language and culture.

【Reference Materials】

65 Implementation Procedure_Cross-disciplinary Exchange Forum & Retreat

56 the 6th International Symposium Report

10 Short-term Fieldwork program

66 The 4th Cross-disciplinary Exchange Forum Report

Point ②　Does the Program offer financial support to students to enable them to concentrate their efforts and time on studies and research activities?

【Explanation and Analyze the Situation】

Since its launch, the Program has offered students an environment where they can concentrate their efforts and time on studies and research activities without financial concern, through various support measures, including a monthly grant of 180,000 to 200,000 yen, housing support, the lending of laptops, financial aid for research activities, and participation in domestic and overseas academic conferences. We also have rooms for the exclusive use of Program graduate students at both the Higashi-Hiroshima and Kasumi Campuses, so that they can freely use these rooms for various purposes, such as individual studies or academic journal club meetings.

Additionally, to address problems that can disturb students' studies and research activities in a timely manner, we monitor the situations faced by students using the mentor system and regular Faculty and Student Opinion Exchange Meetings. Moreover, in FY2015, we began to hold regular lunch meetings where students, faculty members and staff members could frankly communicate with each other, to prepare themselves to promptly handle the troubles that students face in their lives, etc.

In FY2017, the final year in which the Program can receive financial support from MEXT, the University established its policy for managing the Program in FY2018 and onward. We will introduce new financial support measures, including tuition fee exemption and a scholarship system for excellent students. We have also established a source of financing to continue providing housing support, and to cover the expenses related to compulsory subjects, such as Short-term Fieldwork and Long-term Fieldwork/Internship, to allow students to pursue their studies without paying these costs, in principle. To provide detailed information, we held briefings and question-and-answer sessions to develop a common understanding between students and teaching staff, so that we will be able to implement the Program in FY2018 and after in a stable manner. Subsequently, we held lunch meetings and other events to talk with students in an informal atmosphere. Through these activities, we are preparing an environment in which students can study with peace of mind.

【Reference Materials】

44　List of Substantial Support
32　Code on Faculty and Student Opinion Exchange Meeting
28　Handouts of Explanatory Meeting for Financial Support
33　List of Lunch Meeting

Point ③	Does the Program support students in preparing and carrying out their autonomous and original research plans?

【Explanation and Analyze the Situation】

This Program has established the foundations for creative research through interdisciplinary, cross-organizational, and international education, which is clearly distinguished from conventional graduate education. The Program also has a system for facilitating each student's research activities through such measures as financial aid for students' participation in academic conferences, compensation of long-term fieldwork/internships costs, and financial aid for post-QE students' research activities.

In particular, the Program provides students with many opportunities to carry out their own more substantial fieldwork by accessing the latest information on recovery from the Fukushima Daiichi Nuclear Power Plant accident. For their Short-term Fieldwork, students stayed in areas where the evacuation order had been lifted, to deepen their understanding of the actual situation in these areas. In FY2017, we joined ICRP, Fukushima Medical University and the National Institute of Advanced Industrial Science and Technology (AIST) in managing the Dialogue, an assembly for talking with local residents in Fukushima. While involved in on-site management support, Program students were able to consider in depth the relationship between their own research and society.

From FY2018, we will abolish financial aid to support individual students in participating in academic conferences and with their research activities. However, we will continue to provide support for Long-term Fieldwork/Long-term Internships. Additionally, we will enable students to participate in seminars and symposia to be held by the Research Base for Radiation Accidents and Medical Science, which was set up in the Hiroshima University Research Institute for Radiation Biology and Medicine in FY2016, jointly by Hiroshima University, Fukushima Medical University and Nagasaki University. Attending these events will give students increased opportunities to access the latest information relevant to their own research interests.

【Reference Materials】

19 List of Research Topic
47 List of Supporting Participation in Academic Meetings
45 Guide to Research Grant
46 List of Research Grant Payments
61 The 18th SFV, 9th GFV Guide
62 The 18th SFV, 9thGFV Report

Criterion 8. Facilities and Equipment

Point: Does the University have facilities and equipment sufficient for educational and research activities of the Program, and suitable for providing the curriculums?

【Explanation and Analyze the Situation】

With regard to the above equipment and facilities, we have rooms that Program graduate students are free to use for individual studies and seminars, and interactive laboratories equipped with PCs and other devices. We have used the Program funding to improve the equipment in the two RI facilities at Hiroshima University. These facilities now function as the Hiroshima Phoenix Training Center. At the center, students can use portable whole body counters, low-background Ge-detectors, whole-body decontamination shower devices, imaging analyzers, high volume air samplers, Geiger-Muller (GM) counters, and NaI scintillation survey meters, and other devices.

In FY2017, we conducted a survey of the research results achieved using this equipment and these devices, and reported the academic papers and other documents that were written by students using this equipment to MEXT.

【Reference Materials】

50 Device list of Hiroshima Phoenix Training Center

Criterion 9. System for Quality Enhancement and Improvement of Education

Point: Does the Program have an appropriate system to evaluate its implementation processes?

【Explanation and Analyze the Situation】

Since this Program's launch in 2011, a PDCA cycle has been working well through the activities of the relevant Committees and Councils, including the Evaluation Committee. In FY2017 as well, these Committees and Councils proposed plans and improvements, many of which were carried out.

In FY2017, based on the advice of External Evaluation Committee members and students' questionnaire responses mainly for Short-Term Fieldwork, we changed the method used for fieldwork. Under the new method, students received lectures that previously had been given on-site during the Short-term Fieldwork, in Hiroshima before starting their fieldwork. In the field, students were divided into three groups and took part in detailed information gathering activities through dialogue with the local inhabitants and regional surveys. As a result of this change, the students' responses to the questionnaire revealed a higher level of satisfaction regarding information collection in the disaster area. On the other hand, some students commented that making use of the opportunity to participate in an international conference and present their research findings on-site placed too heavy a burden on them. If we continue to provide them with this opportunity next fiscal year, we need to establish a common understanding of what it means for students to present their study achievements. There is therefore room to make continuous improvements to the fieldwork to make it a more effective study subject.

In conjunction with the post-project evaluation of MEXT's Program for Leading Graduate Schools, in FY2017, the Japan Society for the Promotion of Science distributed questionnaires to students. We identified some issues from the results, which have already been shared in the Program. The students surveyed mostly responded positively to the questionnaire, as described in the section on Point② of Criteria 6.

In FY2017, the final year of MEXT financial support, we focused on establishing a system aimed at further developing the Program in FY2018 and beyond, while obtaining a common understanding among the people involved, including students. In September 2017, we held a briefing session for faculty members on the financial foundation and the educational system for the next fiscal year. In October, a briefing session was held for students, in which we had detailed discussions on next year's situation with the Program Director and Coordinator. The views put forward during

these discussions gave us grounds for further deliberation on how to ensure that the Program could obtain the necessary support. Many informal dialogues took place at lunch meetings between students and their mentors, and on other occasions. These endeavors have enabled us to establish a common understanding of how we can continue with the Program and what improvements need to be made, creating positive prospects for the future.

We held External Evaluation Committee meetings in FY2017 as in the past, to solicit advice from those members on how to develop the Program.

【Reference Materials】

34 Questionnaire results on SFW 2016, 2017

28 Handouts of Explanatory Meeting for Financial Support

33 List of Lunch Meeting

Conclusion

For this fiscal year again, based on the nine criteria, we carefully examined the Program activities and achievements, which are reported in this document. Of particular importance is to have been able to confirm the Program's outcomes in FY2017, in light of the achievements accomplished by its graduates. They also participate in and contribute to the Program's education. This fact represents a milestone for the Program, which we consider has attained a certain level of completion. Meanwhile, concerning Point ① of Criterion 5, although it earned a perfect rating of 4 out of 4 last year, we voluntarily identified issues aiming at further development based on the advice and suggestions specific to this Point that we received from the External Evaluation Committee members. As a result, we were able to obtain many positive results.

To ensure that the Program continues to develop, we will deliberate on issues we yet need to address closer towards the beginning of the next fiscal year. We will take into account the upcoming reports to be submitted by the respective members of the External Evaluation Committee.

Evaluation Committee,
Phoenix Leader Education Program (Hiroshima Initiative) for Renaissance from Radiation Disaster, Hiroshima University Graduate Schools

Member of Evaluation Committee

Post	Name	Affiliation	Responsibility in Program
Vice President	Kenji Kamiya	Reconstruction Support/Radiation Medicine	Program Director Radiation Disaster Medicine Course
Professor	Masao Kobayashi	Institute of Biomedical & Health Sciences	Program Coordinator Radiation Disaster Medicine Course
Professor	Tetsuji Okamoto	Institute of Biomedical & Health Sciences	Radiation Disaster Medicine Course
Professor	Makoto Iwanaga	Graduate School of Integrated Arts and Sciences	Radioactivity Social Recovery Course
Professor (Special Appointment)	Kiyoshi Shizuma	Institute of Engineering	Radioactivity Environmental Protection Course
Student	Chryzel Angelica Babaan Gonzales	Graduate School of Biomedical & Health Sciences	Radiation Disaster Medicine Course
Student	Basuki Triyono	Graduate School of Science	Radioactivity Environmental Protection Course
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