

**Graduate School of  
Symbiotic Systems Science and Technology  
Fukushima University**

**Major in Environmental Radioactivity  
Doctoral Program**

**Program Information**

**FY2022**

**(For Students Enrolling in April 2022-March 2023)**

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## **I. Overview and Features of the Major in Environmental Radioactivity**

### **1. Aim of the Major in Environmental Radioactivity (Doctoral Program)**

- (1) The Major in Environmental Radioactivity (Doctoral Program) is designed for students who are motivated to study the dynamics of anthropogenic and naturally occurring radionuclides in the environment and to comprehensively work on measurement, monitoring plan, control, prediction, and evaluation from a mid- to long-term perspective, based on their high level of expertise. During the program, students will actively try to solve problems in environmental protection, assessment and prediction, environmental restoration, decommissioning, intermediate storage, and remediation. They will also try to contribute to further academic development of these study fields. The doctoral program aims to provide an atmosphere for students to develop practical ability to utilize their integrated and deepened learning that can contribute to tackling various social issues.
  
- (2) In the Doctoral Program of the Major in Environmental Radioactivity, students will acquire the following knowledge and abilities, based on their basic and practical academic capability that they have obtained during the Master's Program:
  - A high level of expertise and technology in their field of specialization.
  - The ability to independently engage in research, work on technology development, and communicate with other researchers from different fields of specialization, in order to tackle global and domestic local challenges.
  - The ability to integrate and deepen expertise in various research fields that compose environmental radioactivity science and develop it from a multidimensional perspective without being bound to the conventional framework of academic fields.
  - The ability to present their research achievements at international conferences, etc. and contribute to academic creation.
  - The ability to give informative explanation to general public and to communicate with them.

The Major in Environmental Radioactivity (Doctoral Program) consists of one field of specialization. Required knowledge, research ability and development skills in prospective students are stated below.

#### **[Field of Environmental Radioactivity]**

The study field of environmental radioactivity science requires a wide range of scientific knowledge as its basis, such as ecology, biology, geoscience, mathematical modeling and numerical analysis, chemistry, and physics. We can say that it is also an interdisciplinary academic field that comprehensively covers mechanical engineering, electrical engineering,

and social sciences. In order to realize a reassuring and safe society and environment for the human race, it is absolutely essential to elucidate the mechanisms of radioactivity dynamics in the environment by deepening and improving the expertise in those fields.

Students in the Doctoral Program, therefore, are required to have:

- A high level of research ability
- The ability to independently engage in research based on their knowledge in ecology, modeling, and their skills of measurement and contribute to a high level of research development in various industry sectors that have environmental radioactivity science as its basis

(3) Expected careers after graduation are employees at public research institutes, electric companies, environment-related companies, construction or civil engineering companies, resource-related companies, engineers of analysis and assessment companies, or specialists of government offices.

## **2. Features of the Curriculum**

### **[Practical Training Courses that Utilize the Proximity to the Research Fields and Equip Students with Specialized Technics and Expertise]**

Fukushima University is located approximately 50 km away from the Fukushima Daiichi Nuclear Power Plant (FDNPP), which allows us to conduct even a day-trip survey in the radioactivity-contaminated area. There are very few educational institutions in the world including the Chernobyl area offer such an opportunity. Taking the advantage of the proximity, we offer practical training courses in which students conduct field observations and sampling. Institute of Environmental Radioactivity (IER) has been conducting a high level of research activities utilizing its special technologies, as well as working on various collaborative research activities with other institutions (both domestic and international) based on the agreements concluded. In the Courses in the Basic Phase, students will learn a high level of technologies in the field of Ecology, Modeling, and Measurement. By utilizing the research networks of the IER, students will learn various technologies also from other institutions both domestic and international.

### **[Cross-Cutting Programs that Develop Interdisciplinarity]**

Radionuclides present in the environment dynamically migrate in the environment, such as forests, rivers, and the ocean, while changing their forms and state. Plants and animals intake them from water, soil, and sediments. Then, they migrate to/from living organisms through the food chain. Because of such properties of radionuclides, it is required for researchers to have a wide range of knowledge and cross-cutting technologies in various study fields, to tackle challenges in the field of environmental radioactivity. At the IER, we have researchers in various different fields of

specialization that are related to environmental radioactivity, who are capable of teaching practical research methods, and providing multidimensional advice and suggestions for students. In the Applied Courses, students will acquire interdisciplinary knowledge and technologies drawn from various fields of study. The Courses provide an atmosphere for students to learn various technologies regardless their research fields, utilize the learning to their own research, and develop the ability to see things from wide and interdisciplinary points of view.

### **[Development of Human Resources that Can Take the Lead in Giving the Research Findings Back to the Society]**

Since the FDNPP accident, it has been strongly required to provide correct and easy-to-understand information for the general public. Since its establishment, the IER has continued to hold the 'IER Annual Symposium' and 'Dialogue Meeting' for the general public, in order to give our research findings back to the local community. Especially in the 'Dialogue Meeting', researchers of the IER visit local community center or halls, share their knowledge and have a discussion or opinion exchange with 10 to 30 local people. People with a variety of occupations attend the meeting, such as people from agriculture, fishery, and forestry, specialists in science, homemakers, and company employees. Unlike regular conferences or meetings, our 'Dialogue Meeting' is expected to be an opportunity for local people to ask questions and resolve their concerns that came from their job/life insecurity toward their future. We, as scientists, are expected to answer to their questions from the scientific and objective perspectives. In our Doctoral Program, students make a presentation at the 'Dialogue Meeting' so that they can improve their science-communication ability. In order to give an easy-to-understand explanation on the radiation-related scientific topics to the general public, students are required to have expertise in environmental radioactivity and to be cultured (have a wide range of related knowledge and are able to comprehensively utilize it). Presentation skills which enable students to correctly and simply provide information for the general public are also essential. Doctoral students will make the most of what they learned in the first two years of the Program, what they learned from the IER professors and invited lecturers. By putting those into practice at the 'Dialogue Meeting', they improve their presentation skills and further deepen their knowledge. With the support of their supervisors, they will also be involved in the organization of the 'Dialogue Meeting', such as its planning, implementation, evaluation, and development of improvement plan toward the next Meeting. Through the experience, the IER aims to develop human resources that can take the lead in giving research achievements back to the society.

### **3. Features and Objectives of the Three Study Fields**

Our Doctoral Program consists of three study fields, with each field offering educational and research opportunities outlined below. We seek students who are interested in any of the fields, and find their chosen field to be a good fit for themselves.

### **[Ecology]**

Based on the research in ecology, biology, and radioecological field arising from them, this field develops professional knowledge, expertise and skills; the ability to use practical knowledge and solve problems; and the attitude to understand phenomena from multifaceted perspectives.

### **[Modeling]**

Based on research in geoscience, mathematical modeling, and radioactive modeling field arising from them, this field develops professional knowledge, and skills; the ability to use practical knowledge and solve problems; and the attitude to understand phenomena from multifaceted perspectives.

### **[Measurement]**

Based on research in chemistry, physics, mechanical engineering, and electrical engineering, and radioactivity measurement field arising from them, this field develops professional knowledge, and skills; the ability to use practical knowledge and solve problems; and the attitude to understand phenomena from multifaceted perspectives.

## **II. Academic Schedule**

For details, please refer to the schedule uploaded to LiveCampus which is updated each academic year. You can download it from the following link:

<http://kyoumu.adb.fukushima-u.ac.jp/>

## **III. Educational Systems**

### **1. Class Period**

Period \ Date	Monday to Friday	Saturday
The first Period	8:40 - 10:10	8:40 - 10:10
The second Period	10:20 - 11:50	10:20 - 11:50
Recess	11:50 - 13:00	11:50 - 13:00
The third Period	13:00 - 14:30	13:00 - 14:30
The fourth Period	14:40 - 16:10	14:40 - 16:10
The fifth Period	16:20 - 17:50	16:20 - 17:50
The sixth Period	18:00 - 19:30	18:20 - 19:50
The seventh Period	19:40 - 21:10	

## 2. Course Registration

### (1) Coursework Criteria

The table below corresponds to Appendix 8 in the Regulations of the Graduate School of Symbiotic Systems Science and Technology, Fukushima University.

Category	Phase	Credit
Compulsory	Advanced phase	8 credits
	Thesis study	6 credits
Compulsory-elective	Basic phase	6 credits
Total of minimum number credits to complete		20 credits

\* Students must acquire the above credits and pass the doctoral thesis defense and final examination conducted by the Graduate School.

### (2) Courses to be Taught and Course Registration

Our Doctoral Program has one field of specialization that is 'Field of Environmental Radioactivity'. It consists of three Phases that are 'Basic Phase', 'Advanced Phase', and 'Thesis Study'. In the following section, we provide information on the courses to be taught in each year of the Program.

#### [The First Year of the Doctoral Program]

In the first year, 6 Basic Courses ('Advanced Practicum in Ecological Radioactivity I and II', 'Advanced Practicum in Analyses of Radioactivity Dynamics I and II', and 'Advanced Practicum in Radioactivity Measurement I and II') are offered. In these Courses, students will learn the basic methods to develop and deepen the understanding of environmental radioactivity science. They will choose 3 Courses and acquire expertise in multiple research fields. In the Thesis Study course 'Advanced Research on Environmental Radioactivity', they will further develop their research activity through discussions with their supervisors, their instruction on experimental methods, and seminar courses.

#### [The Second Year of the Doctoral Program]

In the second year of the Doctoral Program, students will take the 'Special Practicum in Environmental Radioactivity I and II' to be given by their supervisors. In these Courses, students will grasp basic theory and ideas for their research topics, and acquire the ability to independently develop their research activity. Additionally, they will join research projects related to their research topics, under the instructions of their supervisors. From other project members, they learn the latest international and domestic situations related to their research topics, and expand their research interest as well as understand other related issues. Through these activities, they will acquire the ability to conduct their research from various viewpoints. Following the first year, they will further develop their research activity through discussions with their supervisors, their instruction on experimental methods, and seminar courses, and lectures on experimental methods in the Thesis Study course 'Advanced Research on Environmental Radioactivity'.

### **[The Third Year of the Doctoral Program]**

In the 'Special Practicum in Environmental Radioactivity III', students improve their research activity through discussions with multiple professors from various research fields including other research fields. This experience will help them deepen and widen their research topics, and improve their ability as an independent researcher. In the 'Special Practicum in Science Communication', students will make presentations on their research findings at the 'Dialogue Meeting' of the IER. They will be involved in the organization of the meeting. Through these experiences, they learn the practical methods to return what they learnt back to the society. Following the second year, they will further develop their research activity through discussions with their supervisors, their instruction on experimental methods, and seminar courses, and lectures on experimental methods in the Thesis Study course 'Advanced Research on Environmental Radioactivity', and aim to complete their Doctoral Thesis.

### **3. Conferment of Degree**

Doctoral students that meet the following requirements will be conferred a Doctoral Degree in Science and Engineering:

- Studied in our Doctoral Program for three years or longer
- Obtained at least 20 credits and complete the compulsory courses (details are stated on page 5)
- Received necessary supervision
- Passed the Doctoral Thesis Defense

\*There is a system for students with outstanding research achievements to shorten their enrollment period, as defined in Article 25 of the Academic Policies of the Graduate School of Fukushima University. For further information, refer to the "Rules Concerning a Shorter Study Period and Early Completion for Students with Outstanding Research Achievements".

From the international and objective viewpoints, students are required to meet the following requirements in order to submit the Doctoral Thesis.

- Made at least two presentations in international conferences
- Published at least three academic papers and at least one of them is written in English
- Have achievements equivalent to the above.

Doctoral Thesis shall be reviewed by the thesis examination committee that consists of three faculty members – one chief examiner who well understands the student's academic work and process during the whole program period in detail, and two sub-examiners. In the examination, the following points shall be evaluated:

- Validity of the research theme and outline



- Research methods
- Validity of the research process
- Validity of the data collection and citation
- Accuracy of data processing and analyses
- Validity of the logic that leads to the conclusion
- Originality, development, and novelty of the research contents
- Practicality and usefulness of the research

A Thesis Defense shall be conducted first, opinions and review comments from all faculty members shall be gathered. Then, the thesis examination committee shall reports the reviewing process and the results to the Graduate School Committee, and obtain approval. The Graduate School Committee requires presence of two-thirds or more of the Committee members. Dean of the Graduate School shall report the decision made by the Graduate School Committee to the President of the University. Based on the report, the President shall confer the Doctoral Degree with Graduation Certificate.

#### **4. Course Registration Procedure**

- (1) Read thoroughly ‘2-(2) Courses to be Taught and Course Registration’, consult the supervisor of your choice, and register the courses on LiveCampus, using a PC (either of the University or of your own) that is connected to the internet.

For more details, refer to the manual that can be obtained on LiveCampus, or at the Educational Affairs Division and Information Network Center during the course registration period.

\*Note that the course registration cannot be completed from done with mobile phones.

\*In case you lost your ID and/or password, consult with the Information Network Center over the counter. They shall not help you resolve this issue over by phone.

- (2) Under any circumstances, students shall not be allowed to take courses for which they did not complete the registration during the designated registration period.

The “Registration Request for Offered Courses and Available Class Period Form” is available for download at the following URL:

<http://kyoumu.adb.fukushima-u.ac.jp/>

- (3) In case it becomes difficult for the student to continue taking the registered courses before the final day of the course period due to unavoidable reasons, such as illness and accidents, withdrawal of course registration may be approved. The student must submit a withdrawal request with a certificate to the Educational Affairs Division by the final day of the course period. (In case of intensive courses, the final day of each course.)

## 5. Grading

The grading includes a five-point scale (S, A, B, C, and F). A grade point (GP) is given to each grade (see the table below). The mark reaches to “60 points or higher” will receive a letter grade C or higher. The specific requirements for meeting a C grade are explained in the syllabus. For class subjects for which Fukushima University does not have grading responsibilities with respect to all aspects of a student’s academic performance, the GP-based grading shall not be used.

	Grade	Academic Achievement	Marks	Grade Point (GP)
Credit	S	Meet the requirements for credit with excellent achievement in all items	90-100	4
	A	Meet the requirements for credit with excellent achievement in many items	80-89	3
	B	Meet the requirements for credit with excellent achievement in some items	70-79	2
	C	Minimum achievement to meet the requirements for credit	60-69	1
No Credit	F	Fail to meet the requirements for credit	59 or lower	0

## 6. Grade Announcement and Appeals

Grades shall be announced on LiveCampus. Please be sure to check your grades for each semester which will be posted on or after the grade announcement date for each semester. Grades will not be distributed on paper, but can be viewed on LiveCampus any time except for its maintenance period.

Students who have objections against their grades can appeal them during the designated period for each semester. The appeals must be submitted through LiveCampus. Details of the procedure for grade appeal procedure and other related issues will be announced through postings.

Your “Appeal” will be handled individually by the lecturer of the relevant course. “Appeals” concerning class subjects instructed by adjunct faculty will be handled by the Educational Affairs Division.

Grade appeals may not be submitted simply because students did not receive grades they expected. An “Appeal” must clearly demonstrate reasonable bases that warrant an appeal, such as the presence of an obvious gap between the received grade and the self-evaluation based on the grading standard published for the syllabus. Appeals which do not meet this requirement shall not be approved.

## **7. Long-Term Study System**

The Graduate School offers a long-term study system in which students may remain enrolled beyond the standard completion limit in case students can only earn a limited number of credits per year or semester due to their professional work. Students must submit a request and receive approval in advance before enrollment or at the end of the first year. Students under the long-term study system must plan in advance and receive approval for allocating five or six years to complete the standard three-year program. The curriculum and the total tuition are the same as those of the standard completion limit.

Students who want to apply must carefully read “Fukushima University Regulations for Students under the Long-Term Study System” and then follow the instructions provided for applying during the application period.

#### IV. Course Information

##### 1. Courses Offered

The table below corresponds to Appendix 7 in the Regulations of the Graduate School of Symbiotic Systems Science and Technology, Fukushima University. However, the columns of instructors have been added for the students admitted in 2022.

Field	Sub-field	Phase	Course Name	Year (semester)	Category*1		Lecturer*2			Note	Teacher
					C	CE	L	E	F/E		
Field of Environmental Radioactivity	Ecology	Basic	Advanced Practicum in Ecological Radioactivity I	1 (1)		2			○		Yoschenko, Wada, Ishiniwa, Igarashi
			Advanced Practicum in Ecological Radioactivity II	1 (2)		2			○		Yoschenko, Wada, Ishiniwa, Igarashi
	Modeling	Basic	Advanced Practicum in Analyses of Radioactivity Dynamics I	1 (1)		2			○		Konoplev, Gusyev, Takata, Hirao, Wakiyama
			Advanced Practicum in Analyses of Radioactivity Dynamics II	1 (2)		2			○		Konoplev, Gusyev, Takata, Hirao, Wakiyama
	Measure-ment	Basic	Advanced Practicum in Radioactivity Measurement I	1 (1)		2			○		Tsukada, Torii, Rahman
			Advanced Practicum in Radioactivity Measurement II	1 (2)		2			○		Tsukada, Torii, Rahman
	Common	Advanced	Special Practicum in Environmental Radioactivity I	2 (3)	2				○		Thesis Supervisor
			Special Practicum in Environmental Radioactivity II	2 (4)	2				○		Thesis Supervisor
			Special Practicum in Environmental Radioactivity III	3 (5)	2				○		Thesis Supervisor
			Special Practicum in Science Communication	3 (6)	2				○		Tsukada, Yoschenko, Rahman, Wada, Hirao, Wakiyama
		The sis	Advanced Research on Environmental Radioactivity	1~3 (1~6)	2				○		Thesis Supervisor

\*1 C: Compulsory, CE: Compulsory-elective; \*2 L: Lecture, E: Exercise, F/E: Fieldwork and Experiment.

## 2. Lecture Contents

### <Basic Courses>

#### **[Advanced Practicum in Ecological Radioactivity I]**

(Practicum: 2 credits, Elective, Field of Ecology)

This is a practicum course to be conducted in the Spring Semester in the first year. In this course, students will acquire advanced methods to evaluate the effects of radiation, its accumulation and migration of radionuclides. They will have inspection of radiation-related facilities and learn about the accumulation effects of radionuclides on living organisms, utilization and current situation of evaluation technology for radiation effect, as well as social demands behind them. We provide an atmosphere for students to develop the ability to perform as research leaders through the practical tasks such as, analysis of radionuclides in living organisms and evaluation of radiation dose.

#### **[Advanced Practicum in Ecological Radioactivity II]**

(Advanced Practicum: 2 credits, Elective, Field of Ecology)

This is an advanced practicum course to be conducted in the Fall Semester in the first year. Based on what they learnt in the “Advanced Practicum in Ecological Radioactivity I”, students will further develop the acquired technics for evaluating the effects of radiation, its accumulation and migration of radionuclides. Consulting with the lecturers, they will have visits to other research institutions and have inspection and training programs. Through these activities, they will acquire a high level of technics to evaluate the radioactivity accumulation and dose rate in various living organisms, and the ability to apply their knowledge to handle things in any situation.

#### **[Advanced Practicum in Analyses of Radioactivity Dynamics I]**

(Advanced Practicum: 2 credits, Elective, Field of Modeling)

This is an advanced practicum course to be conducted in the Spring Semester in the first year. In this course, students will acquire advanced analysis methods for environmental behavior of radionuclides. They will also have inspection of radiation-related facilities, and learn about the cutting-edge technologies for research on radionuclides dynamics, utilization of high-precision numerical simulation and its current situation, as well as the social demands behind them. We provide an atmosphere for students to develop the ability to perform as research leaders through the practical tasks such as high-precision analysis of radionuclides in the environment, and development of numerical calculation models.

### **[Advanced Practicum in Analyses of Radioactivity Dynamics II]**

(Advanced Practicum: 2 credits, Elective, Field of Modeling)

This is a practicum course to be conducted in the Fall Semester in the first year. Based on what they learnt in the “Advanced Practicum in Analyses of Radioactivity Dynamics I”, students will acquire a higher level of skills for analysis of environmental behavior of radionuclides. Consulting with the lecturers, they will have training programs and inspection at other institutions. Through these activities, they will further develop their skills to analyze environmental behavior of radionuclides, and acquire the ability to apply their skills to handle any situation.

### **[Advanced Practicum in Radioactivity Measurement I]**

(Practicum: 2 credits, Elective, Field of Measurement)

This is an advanced course to be conducted in the Spring Semester in the first year. In this course, students will learn multi-radionuclide analysis and advanced measurement methods suitable for respective environmental samples. They will also inspect radiation-related facilities and learn the utilization of various measurement methods for radiation and radioactivity, their actual situations, and the social demands behind them. We provide an atmosphere for students to develop the ability to perform as research leaders through the practical tasks such as analysis of radionuclides and development of radiation-related measurement method.

### **[Advanced Practicum in Radioactivity Measurement II]**

(Advanced Practicum: 2 credits, Elective, Field of Measurement)

This is an advanced course to be conducted in the Fall Semester in the first year. Based on what they learnt in the “Advanced Practicum in Radioactivity Measurement I”, students will learn a higher level of measurement methods, using comparative standard samples, etc. Consulting with the lecturers, they will have inspections and training programs at other institutions. Through these activities, they will further develop their skills to analyze radionuclides in environmental samples, acquire cutting-edge advanced methods related to the analysis of trace nuclides and radioactivity-related measurement, in order to acquire skills to handle things in any novel situation.

### **<Advanced Courses>**

#### **[Special Practicum in Environmental Radioactivity I]**

(Advanced Practicum: 2 credits, Compulsory)

In this course, students will refer to the latest domestic and overseas research cases correspond to their own research topics. From the research cases, they will learn how to set research objectives, develop and integrate them, and how to compose scientific academic papers. Lecturers will provide guidance for students on how to develop and improve their research methods and plan. Through the guidance, students will build the basic theories and concepts for their own research, and develop the ability to independently conduct research activity. In addition, they will

join research projects that correspond to their respective research topics, and learn the latest information and situation of the research field from the project members under the instructions of their supervisors. Through these activities, they will acquire the ability to conduct their own research from various perspectives.

#### **[Special Practicum in Environmental Radioactivity II]**

(Advanced Practicum: 2 credits, Compulsory)

In this course, students will learn the latest findings and improvement of their research fields, the latest domestic and overseas research cases that are required for their research, as well as the basic theory that is necessary. Lecturers will provide guidance for students on their new research development, and help them build theory and concepts of their research. In addition, they will join research projects that are related to their topics. In such projects, they will

#### **[Special Practicum in Environmental Radioactivity III]**

(Advanced Practicum: 2 credits, Compulsory)

This is an advanced course to be conducted in the 5th Semester in the third year. In this Course, students will examine their own research work, process, and achievements so far, through discussions with multiple professors (including professors from different fields). It will help them enhance and expand their research contents and acquire the ability as an independent researcher.

#### **[Special Practicum in Science Communication]**

(Advanced Practicum: 2 credits, Compulsory)

This is an advanced course to be conducted in the third year. In this Course, firstly, students will work on the theoretical study and learn basic knowledge and methods of science communication. Then, they will make presentations at a 'Dialogue Meeting', which is organized by the IER for the general public, and explain their research contents in a way that general people can understand. Furthermore, with the support of their supervisors, students will be involved in the organization of the Dialogue Meeting such as its planning, implementation, evaluation, and development of improvement plan toward the next Meeting. Through this experience, students will strengthen their ability to return back their scientific findings to the society.

#### **< Thesis study >**

##### **[Advanced Research on Environmental Radioactivity]**

(Advanced Practicum: 6 credits, Compulsory)

Under the instruction of their supervisors, students will choose their research topic, make a research plan that is considered to be the most appropriate, and carry it out with the aim of developing practical ability to complete their work on their own and independently. They will proceed with experiments, observations, and analyses in cooperation with research project

members. Then, they will conduct verification tests to confirm that their theory and the results of experiments, observations, and analyses are the same. They will then write a Doctoral Thesis on their research. In the Doctoral Thesis Defense, not only the originality of the Thesis but also its concreteness, practicality, and usefulness will be reviewed.

## V. Other Information

### 1. Study Abroad through Inter-University Exchange Agreements

Fukushima University has academic exchange agreements with 53 overseas universities through the Inter-University Exchange Agreements. In addition, it has student exchange agreements with 35 universities. It promotes exchanges through the student exchange and other programs for sending and receiving students.

\*For students studying at a university which has a student exchange agreement with Fukushima University, the payments of the enrollment fee, examination fee, and tuition to the destination university are waived. However, students are required to pay tuition to Fukushima University while they are studying at the destination university. Other costs associated with studying abroad, such as travel and living expenses, are generally paid by the student. If you are considering studying abroad at universities listed below please contact the International Center.

#### (1) Number of outgoing students (Students of all Faculties and Graduate Schools are eligible.)

Partner University	Number of students that can be accepted
Hebei University	Up to five students
All other partner universities	Up to two students each university (in principle)

\*Number of outgoing students may be adjusted from year to year depending on the extent to which partner universities accept/send students.

#### (2) Eligibility for Application

Students who meet the following requirements may apply for the study abroad program:

- Students that belong to Fukushima University as of the date of application.
- Students that are able to earn credits or work on professional research activities at their destination universities with clear objectives.
- Students who meet a language proficiency level set by the International Center. (For those who apply to a university which has language proficiency requirements)
- Students that are able to continue and complete their study at Fukushima University after returning from the study abroad programs.

\* At the time of application, research students and students who have already passed the



minimum period of study due to poor academic performance are NOT eligible for application.

### (3) Duration of Study Abroad

Duration of study abroad is from 6 to 12 months. Program starting date varies depending on the destination university. (Normally between August and October)

### (4) Schedule until Departure

The call for applications for FY2022 is as follows. The recruitment will be posted to the bulletin board at the International Center and on its website. Please note that the schedule may change.

Early November 2022 - January 31, 2023	Application period
Early to mid- February 2023	Screening and interviews
Late February 2023	Announcement of nominated students
March - July 2023	Travel Preparation period (visa, air ticket, etc.)
Late July 2023	Information sessions on crisis management, scholarship application procedure, etc.
August - October 2023	Departure for destination universities

[\\*For details, please check the bulletin board or the website of the International Center.](#)

\*The nomination becomes official after the destination university issues permission to accept the student. Even if the student is nominated in the selection process, the nomination will be cancelled if this permission is not issued.

\*The exchange students may receive grant-type scholarships from the Japan Student Services Organization. The scholarship amount varies from 30,000 to 100,000 yen per month, depending on the region.

#### ◆International Center◆

On the 1<sup>st</sup> floor of the Lecture Building S

Office hours: 9:00 am to 12: 30 pm/1:30 pm to 5:00 pm on Monday to Friday

TEL: 024-503-3066

E-mail: [ryugaku@adb.fukushima-u.ac.jp](mailto:ryugaku@adb.fukushima-u.ac.jp)

◇ Universities with students exchange agreement: 35 universities in 17 countries/regions\*

Country/Region	Partner Universities	URL
China	East China Normal University	<a href="http://www.ecnu.edu.cn">http://www.ecnu.edu.cn</a>
	Hebei University	<a href="http://www.hbu.edu.cn">http://www.hbu.edu.cn</a>
	Chongqing University of Technology	<a href="http://www.cqut.edu.cn">http://www.cqut.edu.cn</a>
Taiwan	National Taipei University	<a href="https://www.ntpu.edu.tw">https://www.ntpu.edu.tw</a>
	Wenzao Ursuline University of Languages	<a href="http://www.wzu.edu.tw">http://www.wzu.edu.tw</a>
	Hankuk University of Foreign Studies	
South Korea	Hankuk University of Foreign Studies	<a href="http://www.hufs.ac.kr">http://www.hufs.ac.kr</a> <a href="http://international.hufs.ac.kr">http://international.hufs.ac.kr</a> (For foreign students)
	University of Seoul	<a href="https://www.uos.ac.kr">https://www.uos.ac.kr</a>
	Chung-Ang University	<a href="http://neweng.cau.ac.kr">http://neweng.cau.ac.kr</a>
	Pai Chai University	<a href="http://www.pcu.ac.kr">http://www.pcu.ac.kr</a>
The Philippines	Ateneo de Manila University	<a href="http://www.ateneo.edu">http://www.ateneo.edu</a>
Vietnam	University of Social Sciences and Humanities, Vietnam National University Hanoi	<a href="https://www.vnu.edu.vn">https://www.vnu.edu.vn</a>
The United States	University at Albany, State University of New York	<a href="http://www.albany.edu">http://www.albany.edu</a>
	Colorado State University	<a href="http://www.colostate.edu">http://www.colostate.edu</a>
	University of the Ozarks	<a href="http://www.ozarks.edu">http://www.ozarks.edu</a>
	San Francisco State University	<a href="http://www.sfsu.edu">http://www.sfsu.edu</a>
	University of St. Thomas	<a href="https://www.stthom.edu">https://www.stthom.edu</a>
	Louisiana State University	<a href="https://lsu.edu">https://lsu.edu</a>
The United Kingdom	University of Glasgow	<a href="https://www.gla.ac.uk">https://www.gla.ac.uk</a>
	Northumbria University	<a href="https://www.northumbria.ac.uk">https://www.northumbria.ac.uk</a>
Germany	Ruhr-University Bochum	<a href="http://www.ruhr-uni-bochum.de">http://www.ruhr-uni-bochum.de</a>
	Leibniz University	<a href="https://www.uni-hannover.de">https://www.uni-hannover.de</a>

	Hannover	
	Ludwigshafen University of Business and Society	<a href="http://www.hs-lu.de">http://www.hs-lu.de</a>
	Münster University of Applied Sciences	<a href="https://en.fh-muenster.de">https://en.fh-muenster.de</a>
The Netherlands	Hanze University of Applied Sciences	<a href="https://www.hanze.nl">https://www.hanze.nl</a>
Spain	University of Zaragoza	<a href="https://www.unizar.es">https://www.unizar.es</a>
Serbia	University of Belgrade	<a href="http://www.bg.ac.rs">http://www.bg.ac.rs</a>
Romania	University of Bucharest	<a href="https://unibuc.ro">https://unibuc.ro</a>
Hungary	Károli Gáspár University of the Reformed Church in Hungary	<a href="http://www.kre.hu">http://www.kre.hu</a>
Slovenia	University of Ljubljana	<a href="http://www.uni-lj.si">http://www.uni-lj.si</a>
Belarus	Belarusian State University	<a href="http://www.bsu.by">http://www.bsu.by</a>
Russia	Far Eastern State Transport University	<a href="http://en.dvgups.ru">http://en.dvgups.ru</a>
Turkey	Ankara University	<a href="http://www.ankara.edu.tr">http://www.ankara.edu.tr</a>
	Middle East Technical University	<a href="http://www.metu.edu.tr">http://www.metu.edu.tr</a>
	Ege University	Contact the International center for details.

## **2. Campus Facility Use**

- (1) Please see the relevant sections of the Student Handbook before using the University Library, the Information Network Center, and the Center for Regional Future Design.
- (2) Students, like undergraduate students, can use other facilities on campus. Use these facilities by reading the Student Handbook and contacting the offices of the facilities you use.

## **3. Note about Other Procedures**

### **(1) Announcement for Students**

Notifications about classes, such as class cancellation, make-up classes, and classroom change, as well as communications related to supervision, such as a request for a student to report, are delivered via LiveCampus, the bulletin board on the third floor of the Faculty of Symbiotic Systems Science Research, and verbally.

The University expects students to check posts, so please make it a habit to check LiveCampus and the bulletin board at least once a day. Try not to miss or misinterpret notifications. Please visit individual offices if you have questions about the posted information.

University offices do not respond to questions asked over the phone because this method tends to cause misinterpretation and mistakes. Please be sure to complete course registration and submit the Doctoral Thesis on time by checking the Related Policies. Detailed instructions will be forwarded to students through their supervisors or via bulletin board posts.

### **(2) Issuing of Certificates**

Please use the certificate printing machine installed on the first floor of the Lecture Building (M) to obtain the student discount certificate (Student Travel Fare Discount Certificate), student commuter pass purchase certificate for JR, certificate of enrollment, transcript, certificate of expected program completion, and health certificate. Other types of certificates can be issued from the Educational Affairs Division. In the latter case, please submit your request well in advance, as the certificate will be issued on the next day of the request or later. Availability of the certificate printing machine: Monday-Saturday, 8:30 am-8:30pm

### **(3) Submission of Notifications**

If you need to notify a leave of absence, withdrawal, or other changes, please submit the notification without delay after thoroughly checking the policies included in the Student Handbook and by consulting relevant offices.

## VI Related Policies

### Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology

Created on: March 31, 2008

(Summary)

Article 1 Matters concerning the study and other aspects related to the students of the Fukushima University Graduate School of Symbiotic Systems Science and Technology (hereafter, "Graduate School") are stipulated in these policies, in addition to the Academic Policies of the Graduate School of Fukushima University (created on May 25, 1976; hereafter, "Policies").

(Objectives)

Article 2 The objectives of the Graduate School are to provide broad and diverse research and education to solve the problems of the 21<sup>st</sup> century within the new framework of a "symbiotic" systems science, and develop individuals to become highly skilled professionals and researchers with practical capabilities who can contribute to the local area.

2 The objectives of each major of the Graduate School are as described in the items below:

1. Major in Symbiotic Systems Science and Technology: To develop highly skilled professionals with practical capabilities who can make comprehensive approaches in a medium- to long-term perspective to the tasks necessary to build a society where people, industry, and environment coexist, and who can utilize acquired knowledge to tackle with challenges in society.
2. Major in Environmental Radioactivity: To develop highly skilled professionals with practical capabilities who can make comprehensive approaches in a medium to long term perspective to measurement, monitoring planning, control, prediction, and evaluation of artificial and natural radionuclides, and who can utilize acquired knowledge to tackle with challenges in society.

(Admission and Selection)

Article 3 The selection of new students as stipulated in Article 13 of the Policies shall be conducted by the Dean of the Graduate School, upon deliberation in the Graduate School Committee, based on the results of scholastic examinations and other criteria.

(Fields)

Article 4 Students in the Master's Program are required to belong to one of the Fields stipulated in Article 5, Paragraph 3 of the Policies and students in the Doctoral Program are required to belong to one of the Fields stipulated in Article 5, Paragraph 4 of the Policies.

2 The field or area to belong shall be determined after enrolment.

(Thesis Supervisor)

Article 5 A thesis supervisor shall be assigned to each student.

2 The thesis supervisor is selected by the Graduate School Committee.

(Course Procedure)

Article 6 A course shall be taught as a lecture, practicum, experiment, or exercise, or as a combination thereof.

2 The classes in the preceding paragraph may be administered in locations outside the course's classroom by integrating diverse media into the course, as indicated by the Minister of Education, Culture, Sports, Science and Technology.

(Coursework Overview)

Article 7 Students in the Master's Program of the Major in Symbiotic Systems Science and Technology are required to take courses prescribed in Appended Table 1 based on the coursework criteria prescribed in Appended Table 2. Students in the Doctoral Program of the Major in Symbiotic Systems Science and Technology are required to take courses prescribed in Appended Table 3 based on the coursework criteria prescribed in Appended Table 4. Students in the Master's Program of the Major in Environmental Radioactivity are required to take courses prescribed in Appended Table 5 based on the coursework criteria prescribed in Appended Table 6. Students in the Doctoral Program of the Major in Environmental Radioactivity are required to take courses prescribed in Appended Table 7 based on the coursework criteria prescribed in Appended Table 8. However, those who obtained approval to shorten the study period according to the provisions of Article 25, Paragraph 1 and 2 of the Academic Policies of the Graduate School of Fukushima University may take courses regardless of the year of enrollment prescribed in Appended Table 1, 3, 5 and 7. Those who obtained approval to shorten the study period according to the provisions of Article 25 Paragraph 2-1 may take courses regardless of the coursework criteria prescribed in Appended Table 1 and 5.

2 When deemed necessary by the Thesis supervisor, students can take courses in other graduate schools according to the provisions of Article 22 and Article 23 of the Academic Policies. In this case, the credits the student earned may be included in the credits number based on the coursework criteria prescribed in the preceding paragraph within a range not exceeding 15 credits in total.

3 The credits the student earned according to the provisions of Article 23, Paragraph 3 of the Academic Policies are deemed to have been earned in the Graduate School within a range not exceeding 15 credits, and may be included in the credits number based on the coursework criteria prescribed in Paragraph 1. However, it may be exceeded 20 credits in total including the credits the student deemed to have earned according to the provision of the preceding paragraph.

4 When deemed necessary by the thesis supervisor, students in the Master's Program may take courses of the Undergraduate Program that forms the foundation of the Graduate School. In this case, the credits the student earned shall not count toward the credits based on the coursework criteria prescribed in Appended Table 2.

5 When deemed necessary by the Thesis supervisor, students in the Doctoral Program may take courses of the Master's Program. In this case, the credits the student earned shall not count toward the credits based on the coursework criteria prescribed in Appended Table 4 and 8.

(Coursework Planning)

Article 8 The student must choose a research topic after enrollment by receiving advice from the student's Thesis supervisor within a designated period.

2 In addition to the provision in the preceding paragraph, the student must choose the courses to take under the guidance of the Thesis supervisor, and submit the request before the designated deadline using a designated form.

(Exceptions to the Instruction Procedure)

Article 9 Classes and research supervision in the Graduate School may be held in the evening or other specified time/period so long as it is deemed necessary by the Graduate School Committee.

(Examinations)

Article 10 Examinations for courses shall be administered at the end of the semester or the academic year. However, research papers and other assignments may substitute for examinations in some subject classes.

2 Make-up examinations may be administered to students who are unable to take the examinations prescribed in the preceding paragraph due to illness and other circumstances beyond their control.

(Grades)

Article 11 Examinations and research papers shall be evaluated based on a five-point scale consisting of S, A, B, C, and F, with S, A, B, and C being pass grades and F being failure.

(Thesis and Other Terminal Papers)

Article 12 The Master's Thesis or research results on a specific topic (hereafter, "Master's Thesis") must be supervised by a Thesis supervisor and submitted during the designated period.

2 The Doctoral Thesis must be supervised by a Thesis supervisor, and then submitted during the designated period.

(Final Examination)

Article 13 The final examination shall be administered orally or on paper to students who are enrolled in courses, who carry the necessary number of credits to complete the Master's Program or Doctoral Program, and who have submitted the Master's Thesis (in the Master's Program) or the Doctoral Thesis (in the Doctoral Program).

2 The final examination shall be evaluated as pass or failure.

(Miscellaneous Provisions)

Article 14 In addition to the matters stipulated in these policies, necessary matters concerning the student's coursework shall be determined by the Graduate School Committee.

Article 15 Revision of these policies must be deliberated in the Graduate School Committee.

Supplementary Provisions

These policies shall become effective on April 1, 2008.

Supplementary Provisions

1 These policies shall become effective on April 1, 2010.

2 The provisions in Articles 4, 7, 11, and 13 and Appended Tables 1 and 2 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology, as revised by these

policies, shall be applied to the students admitted for Academic Year 2010 onward. For students whose enrollment continues from March 31, 2010, the provisions then in force shall remain applicable.

Supplementary Provisions

- 1 These policies shall become effective on April 1, 2011.
- 2 The provisions in Appended Tables 1 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology, as revised by these policies, shall be applied to the students admitted for Academic Year 2011 onward. For students whose enrollment continues from March 31, 2011, the provisions then in force shall remain applicable.

Supplementary Provisions

These policies shall become effective on October 1, 2011.

Supplementary Provisions

These policies shall become effective on April 17, 2012 and shall be applied on April 1, 2012.

Supplementary Provisions

These policies shall become effective on March 12, 2014 and shall be applied on April 1, 2013.

Supplementary Provisions

These policies shall become effective on March 12, 2014 and shall be applied on October 1, 2013.

Supplementary Provisions

- 1 These policies shall become effective on April 1, 2015.
- 2 The provisions in Appended Tables 1 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology, as revised by these policies, shall be applied to the students admitted for Academic Year 2015 onward. For students whose enrollment continues from March 31, 2015, the provisions then in force shall remain applicable.

Supplementary Provisions

- 1 These policies shall become effective on April 1, 2016.
- 3 The provisions in Appended Tables 1 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology, as revised by these policies, shall be applied to the students admitted for Academic Year 2016 onward. For students whose enrollment continues from March 31, 2016, the provisions then in force shall remain applicable.

Supplementary Provisions

These policies shall become effective on April 1, 2016.

Supplementary Provisions

These policies shall become effective on April 1, 2017.

Supplementary Provisions

- 1 These policies shall become effective on April 1, 2018.
- 2 The provisions in Appended Tables 1 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology, as revised by these policies, shall be applied to the students admitted for Academic Year 2018 onward. For students whose enrollment continues from March 31, 2018, the provisions then in force shall remain applicable.



Supplementary Provisions

- 1 These policies shall become effective on April 1, 2019.
- 2 The provisions in Appended Tables 1 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology, as revised by these policies, shall be applied to the students admitted for Academic Year 2019 onward. For students whose enrollment continues from March 31, 2019, the provisions then in force shall remain applicable.

Supplementary Provisions

- 1 These policies shall become effective on April 1, 2020.
- 2 The provisions in Appended Tables 1 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology, as revised by these policies, shall be applied to the students admitted for Academic Year 2020 onward. For students whose enrollment continues from March 31, 2020, the provisions then in force shall remain applicable.

Supplementary Provisions

- 1 These policies shall become effective on April 1, 2021.
- 2 The provisions in Article 4, Article 7 Paragraph 1, Article 13, Appended Table 1, 5, and 6 of the policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology, as revised by these policies, shall be applied to the students admitted for Academic Year 2021 onward. For students whose enrollment continues from March 31, 2021 the provision then in force shall remain applicable.

Supplementary Provisions

These policies shall become effective on May 12, 2022 and shall be applied on April 1, 2022

Supplementary Provisions

- 1 These policies shall become effective on April 1, 2022.
- 2 The provisions in Appended Tables 1 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology, as revised by these policies, shall be applied to the students admitted for Academic Year 2022 onward. For students whose enrollment continues from March 31, 2022, the provisions then in force shall remain applicable.

## **Arrangement Concerning Research Plan and Research Supervision Plan**

This arrangement is based on the provisions of Article 18-2, Paragraph 1, of the Fukushima University Graduate School Regulations, and is intended to provide guidance on the Research Plan and Research Supervision Plan (hereafter, "Plans") in the Graduate School of Symbiotic Systems Science and Technology.

1. The format of the Plans is prescribed separately.
2. In principle, the plans shall be prepared and submitted for each student to be supervised by the end of April of each academic year. However, the Plans for students enrolling in October should be submitted by the end of October.
3. The procedure for preparation of the Plans is as follows
  - (1) The student shall fill in his/her research plan in the correspondent form of the Plans.
  - (2) The supervisor shall hold sufficient discussions with the student, prepare a research supervision plan for the year, and enter it in the correspondent form of the Plans.
  - (3) The supervisor shall show the research supervision plan to the student and submit the correspondent form of the Plans to the Educational Affairs Division after the student confirms the plan.
4. The supervisor shall review the research supervision plan as necessary.

### Supplementary Provision

This arrangement shall become effective on October 1, 2021.

## Rules Concerning Doctoral Thesis

- Article 1 These rules stipulate necessary matters concerning the creation of the Doctoral Thesis as per Article 12, Paragraph 1 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology (hereafter, “Graduate School Policies”).
- Article 2 The creation of the Doctoral Thesis shall receive the guidance of, in principle, the same thesis supervisor for three years, except where the Graduate School Committee recognizes the need for changing the supervisor based on the continuation and expansion of the student’s research.
- 2 Should the need arise for changing the thesis supervisor, the student must promptly notify the Dean of the Graduate School as per Article 5, Paragraph 2 of the Graduate School Policies.
  - 3 Regarding the preceding paragraph, the student is not allowed, in principle, to change the Thesis supervisor on or after the date on which an application form for Pre-Examination (designated form) discussed in next Article is submitted.
- Article 3 Students wish to obtain a Doctoral Degree must select a Doctoral Thesis topic upon receiving the guidance of the Thesis supervisor, and submit it using the “Doctoral Thesis Review Application” (designated form) and the designated required documents to the Educational Affairs Division by October 1 (two days after this date if it is Saturday; the following day if it is Sunday) of the academic year in which the student completes the program. For students who have exceeded the standard completion limit and desire to complete the program in September (hereafter, “September Candidates”), the submission deadline shall be April 1.
- Article 4 Students passed the pre-examination must submit “Doctoral Thesis Review Application” and the designated required documents to the Educational Affairs Division by January 20 of the academic year in which the student completes the program. For September Candidates, the submission deadline shall be July 20.
- Article 5 The Doctoral Thesis Review Committee prescribed in Article 8 of the Regulations Concerning Fukushima University Degrees (created on May 25, 1976) shall consist of one chief examiner and two sub-examiners. However, it may have four-examiners at the maximum if deemed necessary depending on the research contents, etc.
- 2 The Thesis Examiners shall, in principle, consist of the faculty members of this Graduate School.

- 3 If deemed particularly necessary by the Graduate School Committee, faculty members and individuals of other graduate schools or graduate programs, research institutions, and organizations can be added to the Review Committee as sub-examiners notwithstanding the policy in the preceding paragraph.

Article 6 The Pre-Examination shall be administered at least three months before the planned Final Examination date, and if deemed necessary, students shall be requested to conduct additional experiments, etc. The result of the Pre-Examination shall be reported in the Graduate School Committee.

2 The Final Examination as prescribed in Article 9 of the Regulations Concerning Degree shall be administered orally or on paper with a primary focus on the Doctoral Thesis after the completion of the Pre-Examination of the Doctoral Thesis. The Final Examination shall be open to the public.

3 The Doctoral Thesis Examination and the Final Examination shall be completed by February 20. However, for students who wish to complete their studies in September, the examination must be completed by August 20.

Article 7 The student has to publish his/her doctoral thesis. Refer to the "Degree Application Guide" distributed for details. The student has to submit one copy each of the manuscript of the doctoral thesis and the abstract of the doctoral thesis to the Educational Affairs Division by March 20. However, students who wish to complete their studies in September must submit them by September 20.

Article 8 The details of the creation of the Doctoral Thesis shall be determined by student's respective field.

#### Supplementary Provisions

These rules shall become effective on September 28, 2011.

These rules shall become effective on April 1, 2013.

These rules shall become effective on October 12, 2016.

## **Doctoral Thesis Review Criteria**

### **(1) Research Topic**

Research must be academically and socially significant; the significance must be explicitly indicated in the research topic.

### **(2) Review of Literature**

The thesis must adequately review and analyze related studies relevant to the thesis research and explicitly situate its advancement in the context of the findings and unanswered questions in such studies. Furthermore, sources must be properly cited in a manner that advancement of the research can be understood.

### **(3) Research Method**

The thesis must select a proper research method appropriate for the research topic; it must also handle the sources and data, as well as interpret the results of the analysis, in an appropriate manner.

### **(4) Structure of the Thesis**

The thesis must adopt a logical framework to make a consistent argument; it must draw proper conclusions.

### **(5) Originality**

The research topic must be novel and beneficial, and advance the scholarship in its research field.

### **(6) Compliance with Ethical Standards**

The thesis research must be conducted by complying with domestic and international ethical standards.

# Arrangement Concerning Doctoral Thesis Review and Final Examination

Created on: September 28, 2011

Revised on: March 11, 2015

Revised on: October 12, 2016

Revised on: July 14, 2021

1. Application Form for Doctoral Thesis Pre-Examination Students to complete the Doctoral Program (hereafter, "Students") shall submit the "Application Form for Doctoral Thesis Pre-Examination" (Form 1) to the Educational Affairs Division by October 1\*after obtaining the signature and seal by the student's Thesis supervisor, with the designated documents. For students who have exceeded the standard completion limit and desire to complete the program in September (hereafter, "September Candidates"), the submission deadline shall be April 1\*.

## 2. Candidates for Doctoral Thesis Examiners

Candidates for Doctoral Thesis Examiners, in principle, shall be selected by Thesis supervisors from the Faculty members of the Graduate School of Symbiotic Systems Science (one chief examiner and two sub-examiners). If deemed necessary, four sub-examiners can be selected at the maximum. If deemed necessary depending on the research contents, faculty members and individuals of other graduate programs, graduate schools, or research institutions can be the candidates for sub-examiner. At least one of the candidates for the Doctoral Thesis Examiners must have a professor position.

Thesis supervisors shall write the names and affiliations of the selected candidates in the "List of Candidates for the Doctoral Thesis Examiners" (Form 2), and submit it to the Educational Affairs Division by October 1\*. For Candidates for the Doctoral Thesis Examination September Candidates, the submission deadline shall be April 1\*.

## 3. Selection of Doctoral Thesis Examiners

Committee Meeting of the Graduate School of Symbiotic Systems Science and Technology shall select the Doctoral Thesis Examiners, referring to the candidates suggested by the supervisors.

## 4. Notification of the Doctoral Thesis Examiners

The Educational Affairs Division shall notify the list of selected Doctoral Thesis Examiners to the supervisors and students immediately after deciding.

## 5. Criteria for the Doctoral Thesis

In order to objectively ensure the quality of the Doctoral Thesis, all or part of the contents of the Doctoral Thesis must meet the following requirements:

- All or part of the contents have been published or decided to be printed for publishing by a day before the Doctoral Thesis Examination.
- Number of publications must be three or more
- One of the publications must be peer-reviewed, written in English, and of which first author is the student
- Contents of the Doctoral Thesis should be presented twice or more at international conferences

#### 6. Pre-Examination of the Doctoral Thesis

Pre-Examination shall be administered at least three months before the planned Final Examination date, and if deemed necessary, students shall be requested to conduct additional experiments, etc. The result of the Pre-Examination shall be reported in the Graduate School Committee.

#### 7. Submission and Examination of the Doctoral Thesis

Students passed the Pre-Examination of the Doctoral Thesis shall ask the chief-examiner for confirmation, and submit the “Application Form for Doctoral Thesis Examination” (Form 7) to the Educational Affairs Division, with other designated documents. They shall prepare hard copies of the Doctoral Thesis and abstract for each examiner, which have been confirmed by the chief examiner, and submit them to the Educational Division by January 20\*. For September Candidates, the deadline shall be July 20\*. Doctoral Thesis Examiners shall review the submitted Thesis by February 20\*. For September Candidates, the review shall be done by August 20\*.

#### 8. Final Examination of Doctoral Thesis

The Final Examination shall be open to public and shall be conducted on a date that any faculty members of the Graduate School and all Doctoral Thesis Examiners are able to participate. The Final Examination, as prescribed in the “Rules Concerning Doctoral Thesis”, must be conducted on or before February 20\*. For September Candidates, the Examination must be conducted on or before August 20\*.

The Final Examination, in principle, shall be for 60 minutes for each student, which consists of a 40-minute presentation and a 20-minute question and answer session. The role of MC shall be performed by Review Committee. Students shall make a Doctoral Thesis abstract (Form 5) and hand it out to all attendees at the Final Examination. Arrangement of the Final Examination, such as order of presentation, reservation of venue, setting of venue, and preparation of projectors shall be done mainly by the Educational Affairs Division.

#### 9. Doctoral Thesis Examination and Submission of The Report on the Final Examination Result Report

The chief examiner shall determine the result (pass or fail), listening to the opinions of sub-examiners and comprehensively considering the result of the Final Examination. The chief examiner report the result of the Doctoral Thesis Examination, the Final Examination, and the result in the “Result Report

for the Thesis Review and the Final Examination” (Form 3), and submit by February 20\*. For September Candidates, the deadline shall be August 20\*. Important things that the report must include is about the student’s novel finding and its details. Chief examiner and sub-examiners shall give their names in hand writing and put their seals on Form 3.

#### 10. Degree Conferment Approval in the Graduate School Committee

The Graduate School Committee shall make the determination in the conferment of Degree, based on the submitted “Result Report for the Thesis Review and the Final Examination” (Form 3).

Determination shall be made by voting and the Degree shall be conferred when two-thirds or more of the Committee members agree.

#### 11. Submission of Doctoral Thesis and Doctoral Thesis Abstract

Students that have been decided to be conferred a Doctoral Degree must register and make open the Doctoral Thesis on Fukushima University Repository (FUKURO). Also for recording, students must submit the Doctoral Thesis and the Doctoral Thesis Abstract in PDF (in CD-R) to the Educational Affairs Division by March 20\*. For September Candidates, by August 20\*. The CD-R shall be donated to Fukushima University Library from the Educational Affairs Division for their publishing and recording purposes.

\*If the date falls on Saturday, it shall be two days after. If it falls on Sunday, it shall be one day later.

#### Supplementary Provisions

These arrangements shall become effective on April 1, 2013 and shall be implemented from August 28, 2013.

#### Supplementary Provisions

This arrangement shall become effective on March 11, 2015.

#### Supplementary Provisions

This arrangement shall become effective on October 12, 2016.

#### Supplementary Provisions

This arrangement shall become effective on August 1, 2021.



## Arrangement Concerning the Change of Thesis Supervisor

Created on April 8, 2009

The Symbiotic Systems Science and Technology Graduate School Committee

Revised on February 10, 2021

1. When deemed necessary based on the continuation and expansion of the student's research, the Thesis supervisor may be changed upon deliberation by the Graduate School Committee.
2. The Dean of the Graduate School may, based on the request of the student and through a deliberation by the Graduate School Committee, change the Thesis supervisor if the said supervisor is unable to continue supervising the Thesis Study, Advanced Research on Symbiotic Systems Science, or Advanced Research on Environmental Radioactivity due to participation in domestic or overseas training programs, retirement, a change of job, and other reasons.
  - (2) The Dean of the Graduate School may, based on the request of the student and through a deliberation by the Graduate School Committee, change the Thesis supervisor when reasons such as domestic training and overseas training dissipate.
3. Should the need arise for changing the thesis supervisor, the student must obtain permission from both the new and old thesis supervisors, and submit a request to the Dean of the Graduate School. The Dean of the Graduate School may, based on the request of the student and through a deliberation by the Graduate School Committee, change the Thesis supervisor.
  - (2) The request shall be submitted at the beginning of an academic year, except where deemed necessary by the Graduate School Committee.
  - (3) Regarding the preceding paragraph, the student is not allowed, in principle, to change the thesis supervisor on or after the date on which the student submits the "Master's Thesis Topic Notification" or an application for pre-examination of Master's Thesis in the academic year in which the student completes the program.
4. Should there be circumstances other than Reasons 1 and 2 that make the continuation of research difficult, the Dean of the Graduate School may, through a deliberation by the Graduate School Committee, change the Thesis supervisor.
5. When deemed necessary to change the field due to a change in the Thesis supervisor, the Field may be changed by having the issue deliberated by the Graduate School Committee.

# Regulations Concerning Fukushima University Graduate School Students under the Long-Term Study System

Created on: February 18, 2003

Revised on: April 1, 2004

April 1, 2005

March 18, 2008

March 16, 2010

June 19, 2012

September 4, 2012

March 8, 2022

(Summary)

Article 1 These regulations stipulate necessary matters concerning students under the long-term study system as per Article 23-4, Paragraph 2 in the Academic Policies of the Graduate School of Fukushima University.

(Eligibility)

Article 2 Students who are eligible to apply for the long-term study system shall be those who wish to systematically take coursework and complete the program over a period of time that exceeds the standard completion limit due to circumstances such as having an occupation. However, students who are enrolled in their final year may not apply.

(Application Procedure)

Article 3 Students who wish to become a student under the long-term study system must submit a request to the Dean of the Graduate School before the designated deadline before starting the long-term study. They must attach the documents described in the items below for their request:

- 1 Long-Term Study Application Form (Appended Form 1)
- 2 Certificate of Employment (Appended Forms 2-1 and 2-2)

(Approval)

Article 4 The approval for the long-term study system for the students submitted an application shall be deliberated by the Graduate School's Review Committee, decided through deliberation by the Graduate School Committee, and made by the Dean of the Graduate School.

(Long-Term Study Period)

Article 5 The period for which the students under the system are allowed to systematically take coursework and complete the program over a period of time that exceeds the standard completion limit (hereafter, "long-term study period") shall use one year as its unit and be as described in the items below. Note that the long-term study period shall commence at the beginning of each academic year.

- 1 Up to four years for the Master's Program, and up to six years for the Doctoral Program, for students desiring to begin it at the time of enrollment
- 2 Up to twice the uncompleted portion of the standard completion period for students desiring to begin it after they have already been enrolled

(Special provision of enrollment limit)

Article 6 Among the students stipulated in Item 1, only those who are deemed by the Graduate School Committee to be in special circumstances shall be permitted to extend the enrollment limit to five years if they have been approved for four years of the extended-study period, and to seven years if they have been approved for six years of the long-term study period.

(Extension and Shortening)

Article 7 The extension or shortening of the approved long-term study period shall be limited to one time. Students who desire it must submit a request to the Dean of the Graduate School before the last day of February (last day of August for students admitted in Fall semester) of the academic year that immediately precedes the academic year in which the student desires to complete the study. They must attach the Request for Change of Long-Term Study Period (Appended Form 3). However, students who are enrolled in the final year of their long-term study period shall not be permitted to submit the request.

2 The matter in the preceding paragraph shall be reviewed in the Graduate School's review committee, decided through a deliberation by the Graduate School Committee, and approved by the Dean of the Graduate School.

(Loss of Eligibility)

Article 8 In the event that the student has lost the eligibility as a student under the long-term study system, the student must promptly report it to the Dean of the Graduate School.

(Revision)

Article 9 Revision of these policies shall be deliberated by the Education Planning Committee.

(Miscellaneous Provision)

Article 10 In addition to the matters stipulated in these policies, necessary matters concerning the students under the long-term study program shall be determined by the Graduate School Committee.

Supplementary Provision

These regulations shall become effective on February 18, 2003 and be applied to the students admitted for Academic Year 2002 onward.

(Omitted)

Supplementary Provision

These regulations shall become effective on April 1, 2022.

# Detailed Regulations Concerning Fukushima University Graduate School of Symbiotic Systems Science and Technology Long-Term Students

Created on: April 1, 2008

Revised on: April 1, 2010 and February 10, 2021

(Summary)

Article 1 These detailed regulations stipulate necessary matters concerning the students under the long-term study system offered by Fukushima University Graduate School of Symbiotic Systems Science and Technology (hereafter, “students under long-term study system”) as per Article 10 in the Regulations Concerning Fukushima University Graduate School Students under the Long-Term Study System (hereafter, “Regulations”)

(Course Registration)

Article 2 The maximum number of credits a student under the long-term study system in the Master’s Program may register per year is 16 credits including lectures, practicums, experiments, exercises, or practical trainings. For the students who are approved the study period for three years from their matriculation, the maximum number is 20 credits including lectures, practicums, experiments, exercises, or practical trainings.

2 The credits in the preceding paragraph exclude undergraduate courses.

3 Notwithstanding the regulation in the paragraph 1, for the students who are approved the enrollment limit for five years (excluding the period of a leave of absence) stipulated in Article 6, Paragraph 1 of Regulations, the maximum number of credits for the fifth year shall be determined by the Graduate School Committee.

(Extension and Shortening of Study Period)

Article 3 The extension or shortening of the approved long-term study period stipulated in Article 7 of Regulations must be limited only when there are justifiable reasons.

2 The maximum credits in the Master’s Program of each academic year after the approval of extension or shortening of the study period shall be determined by the Graduate School Committee.

(Review Committee)

Article 4 The Review Committee stipulated in Article 4 and Article 7, Paragraph 2 of Regulations shall consist of the committee members described in the items below:

- 1 Two members of the Graduate School Steering Meeting
- 2 Two members of the Educational Affairs Committee
- 3 Individuals who deemed necessary by the Dean of the Graduate School

(Supplementary Rules)

Article 5 In addition to the matters stipulated in these policies, necessary matters shall be determined by the Graduate School Committee.

Supplementary Provision

These regulations shall become effective on April 1, 2008.

Supplementary Provision

These regulations shall become effective on April 1, 2010.

Supplementary Provision

1 These regulations shall become effective on April, 2021.

2 The provisions in Article 2 paragraph 1 and Article 3 paragraph 2, as revised by these rules, shall be applied to the students admitted for Academic Year 2021 onward. For students whose enrollment continues from March 31, 2021, the provisions then in force shall remain applicable.

# Rules Concerning a Shorter Study Period and Early Completion for Students with Outstanding Research Achievement

Created on: January 11, 2017

Graduate School of Symbiotic Systems Science and Technology Committee

Revised on: December 12, 2018 and February 10, 2021

(Summary)

Article 1 These rules stipulate necessary matters concerning the shortening of the study period of the students who have accomplished outstanding research achievements as prescribed in Article 25 of the Academic Policies of the Graduate School of Fukushima University (hereafter, “Study Period Shortening”) and who have completed the program in a period shorter than the standard completion limit (hereafter, “Early Completion”).

(Shortening of Study Period)

Article 2 “Study period shortening” shall mean the shortening of the standard completion limit by 6 months or 1 year for the Master’s Program of the Major in Symbiotic Systems Science and Technology and the Master’s Program of the Major in Environmental Radioactivity Science, and by 6 months, 1 year, 18 months, or 2 years for the Doctoral Program of the Major in Symbiotic Systems Science and Technology and the Major in Environmental Radioactivity.

(Application Procedure)

Article 3 Students who desire to shorten the study period for early completion must submit a request to the Dean of the Graduate School of the Symbiotic Systems Science and Technology (hereafter, “Dean of the Graduate School”) before the designated deadline by attaching the documents described in the items below:

- 1 Request for Study Period Shortening (Appended Form 1)
- 2 Application for the Review of Study Period Shortening (Appended Forms 2-1, 2-2, 2-3, 2-4, 2-5)

Note that the Request for Study Period Shortening must be submitted during the registration period of the semester immediately preceding the semester in which the student plans to complete the course. The Application for the Review of Study Period Shortening must be submitted by July 20<sup>(\*1)</sup> if the student desires to complete the course in March of the same academic year (if the student desires to complete the course in September, then January 20 of the previous academic year<sup>(\*1)</sup>).

(Creation of the Review Committee and Submission for Qualification Review)

Article 4 Upon accepting the Application for the Review of Study Period Shortening, the Dean of the Graduate School shall create a committee for reviewing the study period shortening for students who

have accomplished outstanding research achievements (hereafter, "Study Period Shortening Review Committee").

2 The Dean of the Graduate School shall submit the review of the qualification to the Study Period Shortening Review Committee.

(Organization of the Study Period Shortening Review Committee)

Article 5 The Study Period Shortening Review Committee shall consist of the committee members described in the items below:

- 1 The thesis supervisor of the applicant student (one person)
- 2 The Educational Affairs Committee chairperson
- 3 In addition to the individuals in 1 and 2, the faculty members of the field or area to which the student belongs (two people)

2 The Study Period Shortening Review Committee shall have a chairperson. The Dean of the Graduate School shall appoint the chairperson between the two faculty members of the field or area to which the student belongs.

3 When deemed necessary by the chairperson, the committee may invite individuals not described in Paragraph 1 and solicit their opinions.

(Review and Reporting of Results)

Article 6 The Study Period Shortening Review Committee shall deliberate based on the application documents and produce review results concerning approval.

2 The chairperson must report the review results of the approval done by the Study Period Shortening Review Committee to the Graduate School of Symbiotic Systems Science Steering Meeting that takes place during or before the first week of September if the student desires to complete the course in March of the same academic year (if the student desires to complete the course in September, then the first week of March of the previous academic year).

(Decision for Review Results)

Article 7 The Dean of the Graduate School shall propose the review results of the approval to the Graduate School of Symbiotic Systems Science and Technology Committee that convenes during or before the second week of September if the student desires to complete the course in March of the same academic year (if the student desires to complete the course in September, then the second week of March of the previous academic year). The Committee shall deliberate and make a decision.

(Submission of Thesis or Dissertation and Review)

Article 8 The review schedule and the review criteria of the Master's Thesis or Doctoral Thesis of the student who has been approved for the study period shortening shall be the same as those of the students who complete according to the standard completion limit.

(Award of Credits)

Article 9 Provided that they are approved for study period shortening, the credits for Master's Thesis Study IV of the students in the Master's Program of the Major in Symbiotic Systems Science and Technology, Advanced Research on Symbiotic Systems Science of the students in the Doctoral Program of the Major in Symbiotic Systems Science and Technology, Master's Thesis Study III of the students in the Master's Program of the Major in Environmental Radioactivity shall be awarded only to those students who have passed the review of the Master's Thesis or Doctoral Thesis.

(Others)

Article 10 Revision of these rules or any doubts concerning the implementation must be discussed in the Educational Affairs Committee and deliberated by the Graduate School of Symbiotic Systems Science and Technology Committee.

(\* 1) Two days after the date if it is Saturday; the following day if it is Sunday.

Supplementary Provision

These rules shall become effective on April 1, 2017.

Supplementary Provision

1. These rules shall become effective on April 1, 2019.
2. The rules concerning the study period shortening and early completion for students who have accomplished outstanding research achievements after this revision by these rules shall be applied to the students admitted for Academic Year 2019 onward. For the students whose enrollment continues from March 31, 2019, the provisions then in force shall remain applicable.

Supplementary Provision

- 1 These rules shall become effective on April 1, 2021.
- 2 The provisions in Article 2 and 9, as revised by these rules, shall be applied to the students admitted for Academic Year 2021 onward. For students whose enrollment continues from March 31, 2021, the provision then in force shall remain applicable.



## VII. Diploma Policy, Curriculum Policy

### [Diploma Policy]

The Major in Environmental Radioactivity (Doctoral Program) offers practical education and research utilizing the rich environment for observation that Fukushima University has, and aims to lead the field of environmental radioactivity internationally. Based on the corporative relationships with other institutions and universities both in Japan and overseas, it also aims to develop human resources that can see things from the global point of view. Based on the above-mentioned philosophy, the Doctoral Program aims to develop researchers and professionals who have:

- The ability to elucidate the dynamics of artificial and naturally occurring radionuclides in the environment and comprehensively work on the measurement, monitoring, control, prediction, and evaluation from a mid- to long-term perspective based on their expertise
- The ability to contribute to the academic development and resolving issues of the field of environmental protection, prediction and assessment, environmental remediation, decommissioning, interim storage, and purification
- The practical and comprehensive ability to handle to utilize their integrated and deepened research findings to resolve social issues

To achieve the above purposes, the Doctoral Program provides an atmosphere for students to acquire the following skills based on the basic and practical academic ability that they have obtained during the Master's Program:

1. Expertise and highly-skilled technology in their own field of specialization
2. The ability to independently work on research activity and development, and to communicate with researchers from different research fields.
3. The ability to integrate and deepen expertise in various research fields that consist of environmental radioactivity science and develop it from a multidimensional perspective without being bound to the conventional framework of academic fields.
4. The ability to present their research achievements at international conferences, etc. and contribute to academic creation.
5. The ability to give informative explanation to general public and to communicate with them.

### [Curriculum Policy]

In order to achieve the human resource development mentioned in the Diploma Policy, the Doctoral Program offers three course categories that are 'Basic Courses', 'Applied Courses', and 'Thesis Study'. Also, students will join a research project that their supervisors are involved in, and receive multi-faced and practical advice and instructions from the project members including the members from different fields of specialization.

### [Basic Courses]

Courses that should be taken to acquire the basic knowledge and skills that form the basis of the study in the Doctoral Program.

### **[Advanced Courses]**

Courses to cultivate the specialized abilities and academic knowledge required for researchers and highly-skilled professionals that have advanced knowledge of environmental radioactivity. Students will learn research and presentation methods from multiple professors from different fields of specialization. Advanced Courses are included in which students develop the ability to integrate and deepen expertise as well as further develop the knowledge from a multidimensional perspective. Also, students will acquire science communication skills which enable them to give easy-to-understand explanation to general public on their specialized knowledge.

### **[Thesis Study]**

In this Course, research activities to cultivate the ability to work on research activity and development independently. Students will write a Doctoral Thesis on their research results, and they will be reviewed by the thesis reviewing committee. Then the Doctoral Thesis Defense (The final exam) will be conducted and the results will be examined in the Graduate School Committee Meeting.

In the Doctoral Thesis Defense, the following points will be reviewed by the reviewers (including reviewers from different field of specialization):

- Validity of the research theme
- Research on other related researches
- Research methods
- Composition of the Doctoral Thesis
- Originality
- Validity of compliance

From the international and objective viewpoints, students are required to meet the following requirements in order to submit the Doctoral Thesis.

- Made presentations in international conferences
- Published academic papers written in English
- Have achievements equivalent to the above.

### **(Teaching and Learning Methods)**

Lectures, exercises, experiments, and practical training will be conducted systematically so that students can acquire the abilities set forth in the Diploma Policy. The department aims to achieve its educational goals by providing opportunities to cultivate presentation skills through dialogue, discussion, and the presentation of research results.

### **(Grading of Learning Outcomes)**

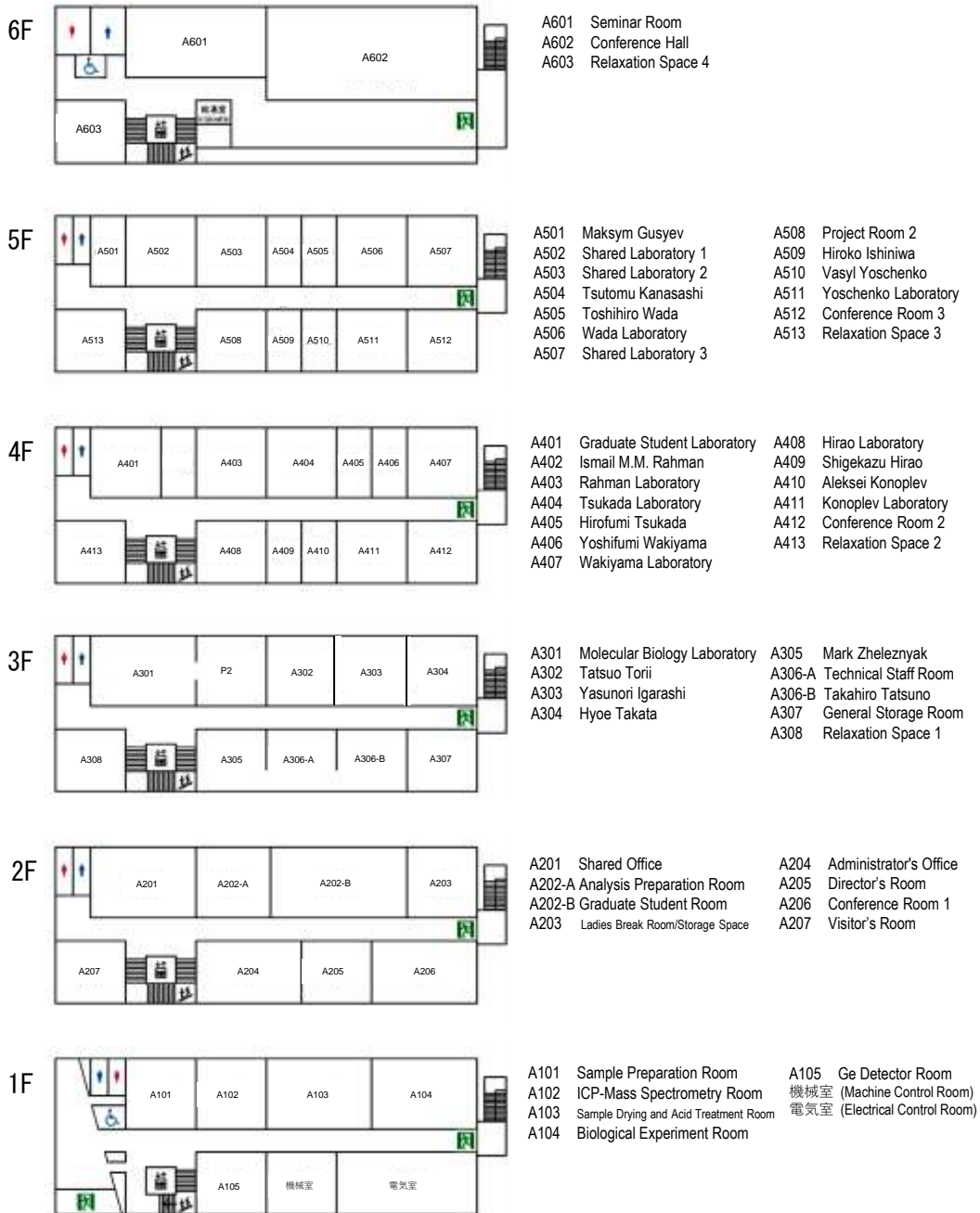
Grades are graded on a scale of S, A, B, C, and F, with S, A, B, and C being passing grades and F being failing grades.

In each course, "grading methods" such as reports, final examinations, practical skills/demonstrations, artworks, etc. are clearly stated in the syllabus, and grades are determined by multiple means of evaluation as many as possible.

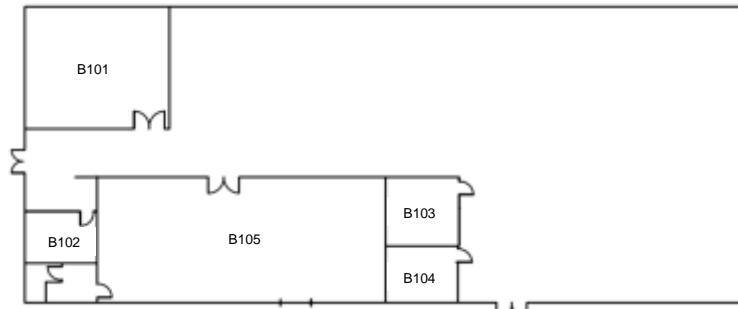
The Doctoral thesis shall be rigorously reviewed in accordance with the Doctoral thesis review criteria.

# Building map

## Institute of Environmental Radioactivity –Main Building–

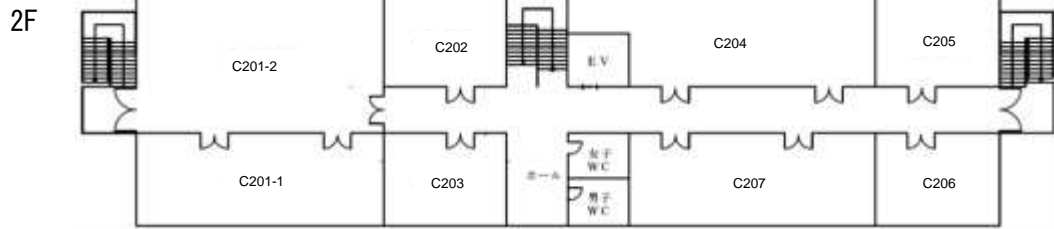


## Institute of Environmental Radioactivity –Sample Storage–

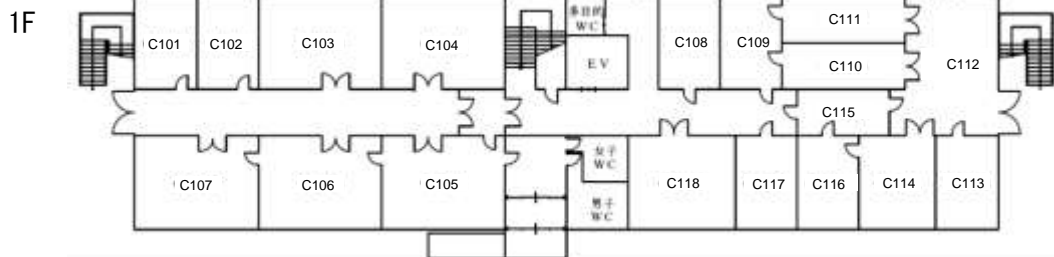


- B101 Soil Sample Storage Room
- B102 Sample Storage Room 1
- B103 Sample Storage Room 2
- B104 Sample Storage Room 3
- B105 Workroom

## Institute of Environmental Radioactivity –Analytical Building–



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|--|---|
| <ul style="list-style-type: none"> <li>C201-1 Exercise Room</li> <li>C201-2 Multi-purpose Room</li> <li>C202 Shared Office 2</li> <li>C203 Meeting Room</li> </ul> | <ul style="list-style-type: none"> <li>C204 General Analysis</li> <li>C205 X-ray analysis &amp; Alpha-ray Spectrometry Room</li> <li>C206 Inorganic Analysis</li> <li>C207 Chemical Analysis (Spectrometry and Chromatography)</li> </ul> |
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| <ul style="list-style-type: none"> <li>C101 Gamma-ray Spectrometry -1</li> <li>C102 Gamma-ray Spectrometry -2</li> <li>C103 Gamma-ray Spectrometry -3</li> <li>C104 Gamma-ray Spectrometry -4</li> <li>C105 Isotope Ratio Mass Spectrometry</li> <li>C106 SEM &amp; FIB</li> <li>C107 TEM &amp; EEELS</li> </ul> | <ul style="list-style-type: none"> <li>C108 Sample Preparation Laboratory(Acid Treatment)</li> <li>C109 Sample Preparation Laboratory(Oven &amp; Furnace)</li> <li>C110 Sample Preparation Laboratory(Plant samples)</li> <li>C111 Sample Preparation Laboratory(Soil samples)</li> <li>C112 Sample Reception Room</li> <li>C113 Shared Experiment Room</li> <li>C114 Sample Preparation Laboratory(Air, Water and Suspended Matters)</li> <li>C115 Sample Storage Room</li> <li>C116 Sample Preparation Laboratory(Mass Evaporation Treatment)</li> <li>C117 Sample Preparation Laboratory(Molecular Biology)</li> <li>C118 Sample Preparation Laboratory(Chemical Treatment)</li> </ul> |
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## **Educational Affairs Division**

(For the Graduate School of Symbiotic Systems Science and Technology)

TEL: 024-548-8357

FAX: 024-548-8224

### Office Hours

Monday to Friday	9:00 to 12:30, and 13:30 to 17:00 17:00 to 20:30 (only on days classes are held)
Saturday, Sunday, and National Holidays	

\*The office may be closed on some days during long holidays and General Exam period. For details, please check the academic calendar or the bulletin board.



1 Kanayagawa, Fukushima City 960-1296

**Graduate School of Symbiotic Systems Science and Technology,  
Fukushima University**

Student Number	
Name	