

**Environmental Radioactivity Science**  
**Major**

Graduate School of  
Symbiotic Systems Science and Technology  
Fukushima University

**Master's Program**

**Program Information**

**2020**

**(For Students Enrolling in Academic Year 2020)**

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# **I Overview and Features of the Environmental Radioactivity Science Major**

## **1. Overview of the Major**

The Institute of Environmental Radioactivity, Fukushima University, which offers this Major, was established on July 1, 2013, prompted by the Tokyo Electric Power Company Fukushima Daiichi Nuclear Power Station accident. It has become an international challenge to understand the ways in which radioactive substances released by accidents at facilities such as nuclear power plants travel in and impact the environment; we, therefore, consider it the responsibility of our university, particularly the Institute for Environmental Radioactivity, to share the lessons from the Fukushima Daiichi Accident with the international community and engage in long-term research activities.

The radionuclides present in the environment dynamically travel in the environment, while changing their forms and state according to atmospheric and water circulation and the activities of organisms. A variety of factors influence their movement, including the physicochemical properties of the radionuclides, meteorological and soil conditions, and the physio-ecological characteristics of plants and animals. Therefore, studying environmental radioactivity requires a holistic perspective and approach, as well as interdisciplinary knowledge drawn from a wide range of sciences, including ecology, biology, geoscience, mathematical modeling, chemistry, physics, mechanical engineering, and electrical engineering. Although the human race has experienced environmental releases of anthropogenic radionuclides caused by atmospheric nuclear testing and accidents, their impacts have not been fully understood. Another important challenge is the need to control naturally occurring radioactive materials in the context of the recent exploitation of natural resources, such as minor metals, which are indispensable for the development of advanced industrial products.

This Major at Graduate School of Symbiotic Systems Science and Technology, Fukushima University was created to develop individuals who can contribute to solving the kind of problems outlined above. It consists of the “Ecology,” “Measurement,” and “Modeling” fields. Faculty members who specialize in environmental radioactivity provide and supervise lectures, exercises, practicums, and the master’s thesis study. The Master of Science and Engineering Degree will be awarded to students who have enrolled in the Major for at least two years; earned 30 credit hours, including the six credit hours for the required “Master’s Thesis Study”; and successfully passed the Master’s Thesis review. We look forward to working with students who are enthusiastic about studying one of the challenges the human race must tackle: *environmental radioactivity*.

## 2. Aim of the Major

The Environmental Radioactivity Science Major is designed for students who are strongly 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, while actively try to solve problems in environmental protection, evaluation of prediction, environmental restoration, decommissioning, intermediate storage, and remediation. The Major aims to develop students with comprehensively evaluating their flexible thinking capacity and analytical and observational capabilities.

## 3. Features and Objectives of the Three Fields

The Major consists of three fields, with each field offering educational and research opportunities (outlined below). We seek students who are interested in any of these fields, and find their chosen field to be a good fit for themselves.

### [Ecology]

Based on 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, expertise, 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, expertise, and skills; the ability to use practical knowledge and solve problems; and the attitude to understand phenomena from multifaceted perspectives.

## II Academic Schedule

Please refer to the schedule (updated for each academic year), uploaded to LiveCampus, for details. You can download the schedule from the following URL:

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

## III Instruction Procedure

### 1. Class Periods

Period \ Day	Monday–Friday	Saturday
First period	8:40 ~ 10:10	
Second period	10:20 ~ 11:50	
Recess	11:50 ~ 13:00	
Third period	13:00 ~ 14:30	13:00 ~ 14:30
Fourth period	14:40 ~ 16:10	14:40 ~ 16:10
Fifth period	16:20 ~ 17:50	16:20 ~ 17:50
Sixth period	18:00 ~ 19:30	18:20 ~ 19:50
Seventh period	19:40 ~ 21:10	

### 2. Class Subject Registration

#### <Coursework Criteria>

Phase category	Class subject category	Criteria	Compulsory	Compulsory-elective	Required Credits for completion
Basic phase	Common class subjects	Class subjects included in the Advanced Phase of student's field	14 credits		14 credits
	Practical class subjects	Practicums included in the Advanced Phase of student's field	2 credits		2 credits
Advanced phase	Applied class subjects	Practicums and lectures included in the Advanced Phase of student's field	2 credits	6 credits	8 credits
	Thesis	Master's thesis study I, II, III	6 credits		6 credits
Total of minimum number credits to complete					30 credits

\* Students must complete these class subjects and pass the Master's Thesis review conducted by the Graduate School.

- (1) In this Major, which consists of three fields, students can designate the class subjects they complete as the Basic Phase or Advanced Phase according to their research topic. Students register for class subjects based on their research topic and its possible expansion, and also based on their thesis supervisor's advice.
- (2) The maximum number of credits students may register per year is 30 credits, which excludes undergraduate class subjects. Extended-term students may register for no more than 16 credits per year (20 credits for students whose study period lasts three years from their matriculation).
- (3) The Master's Thesis Study is designed to be taken consecutively between the second and fourth semesters. However, extended-term students may take two credits per year.
- (4) Special-topic class subjects taught by visiting professors and class subjects offered in an omnibus style may take place in extramural research institutes. If you register for these class subjects, be sure to check the class location and date/time.
- (5) The class subjects in which adult students are enrolled may have their meeting times adjusted. If you are registered for these class subjects, be sure to check the days and time of the class.
- (6) Students may be allowed to take class subjects in other graduate schools or the class subjects in the Faculty of Symbiotic Systems Science when such class subjects are considered necessary by their thesis supervisor.
- (7) Students must complete six credits of the Master's Thesis Study before they are allowed to submit their Master's Thesis.

### 3. Conferment of Degrees

The requirements for completion consist of two years of enrollment in this major, completion of 30 credits (including the six credits from the required "Master's Thesis Study I, II, III" class subject), and passing the thesis review and final examination. To shorten the enrollment period for students with outstanding research achievements, as defined in Article 25 of the Academic Policies of the Graduate School of Fukushima University, please see "Rules Concerning a Shorter Study Period and Early Completion for Students with Outstanding Research Achievement."

The student's Master's Thesis is reviewed mainly by three faculty members—one chief examiner and two sub-examiners who are acquainted with the details of the student's academic work during the entire program period. Upon the administration of the thesis review and final examination, the Graduate School Committee will review the thesis. The chief examiner reports the review process and results to the Graduate School Committee in which two-thirds or more of the members are present. The Dean of the Graduate School reports the results to the President, who, based on the report, confers the Master's degree by issuing a diploma to the student who has been determined to receive the degree.

### 4. The Extended-Study System

The Graduate School offers an extended-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. The extended-term students must plan in advance and receive approval for allocating three or four years to complete the standard two-year program. The curriculum and the total tuition are the same as those of the standard completion limit. Please note that as the study period lasts a long time, the maximum number of credits students may register each year is limited by a fixed number.

Students who want to apply must carefully read “Regulations Concerning Fukushima University Graduate School Extended-Term Students,” and then follow the instructions provided for applying during the application period.

## 5. Registration Procedure

- (1) Please register for class subjects by accessing LiveCampus using an on- or off-campus computer connected to the Internet after thoroughly reading “2. Class Subject Registration.” Please be sure to consult your thesis supervisor before you register.

For details, please see the instructions provided on LiveCampus or the (printed) instructions that are made available at the Educational Affairs Division, the Information Network Center, and so on during the registration period.

\* Note that course registration cannot be completed from a mobile phone.

\* Please contact the Information Network Center if you forget your ID or password.

Note that the office will not be able to help you resolve this issue over the phone.

- (2) Please note that under no circumstances are students allowed to take courses for which they did not register during the designated period. The “Registration Request for Offered Class Subjects 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 class subjects before the final day of study period, due to unavoidable reasons such as illness and accidents, withdrawal of registration may be approved. The student must submit a request with the certifiable document to the Educational Affairs Division by the final day of study period (last day in case of intensive course)

## 6. 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 will not be used.

	Grade	Academic Achievement	Marks	G P
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

## 7. Grade Posting and Appeals

Grades are posted on LiveCampus. Please be sure to check your grades for each semester, which will be added on or after the semester's grade posting date. Please note that grades will not be made available on paper. Grades can be checked any time except during the 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 grade appeal procedure, and related issues, will be announced through postings.

Your "Appeal" will be handled individually by the instructor of the relevant class subject. "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 not meeting this requirement will not be approved.



## IV Course Information

### 1. Courses Offered

Class Subjects and Credits Offered									
Phase	Category	Subject name	Grade	Credits		Type of class			
				Compulsory	Compulsory-elective	Lecture	Exercise	Fieldwork/Experiment	
Basic	Common	Radiochemical analysis	1	2		○			
		Radiation dosimetry	1	2		○			
		Effects of radiation exposure	1	2		○			
		Radioecology	1	2		○			
		Environmental radioactivity science I	1	2		○			
		Environmental radioactivity science II	1	2		○			
		Nuclear disaster studies	1	2		○			
	Sub-total (7subjects)		14	0					
	Practical	Practicum in environmental radioactivity science	1	1				○	
		Advanced practicum in environmental radioactivity science	1	1				○	
Sub-total (2subjects)			2	0					
Advanced	Applied	<<Ecology>>							
		Aquatic radioecology	1		2	○			
		Terrestrial radioecology	1		2	○			
		Forest radioactivity	1		2	○			
		Animal ecology	1		2	○			
		Bio-eco engineering I *	1		2	○			
		Bio-eco engineering II *	1		2		○		
		Environmental microbiology I *	1		2	○			
		Environmental microbiology II *	1		2		○		
		Practicum in ecological radioactivity	2	2				○	
		Sub-total (9subjects)		2	16				
	<<Modeling>>	Dynamics of radionuclides on terrestrial environment	1		2	○			
		Transport phenomena	1		2	○			
		Radioactivity modeling	1		2	○			
		Dynamics of radioactivity in ocean	1		2	○			
		River basin water management I *	1		2	○			
		River basin water management II *	1		2		○		
		Watershed hydrology I *	1		2	○			
		Watershed hydrology II *	1		2		○		
		Groundwater basin management and planning I *	1		2	○			
		Groundwater basin management and planning II *	1		2		○		
		Practicum in radioactivity modeling	2	2				○	
Sub-total (11subjects)		2	20						

Advanced	Applied	<<Measurement>>					
		Dynamics of radioactivity in terrestrial biosphere	1		2	○	
		Separation technology of radioactive materials	1		2	○	
		Radiation measurement engineering	1		2	○	
		Solid state physics I *	1		2	○	
		Solid state physics II *	1		2		○
		Analytical chemistry I *	1		2	○	
		Analytical chemistry II *	1		2		○
		Mechatronics I *	1		2	○	
		Mechatronics II *	1		2		○
		Practicum in radioactivity measurement	2	2			
	Sub-total (10subjects)		2	18			
	Thesis	Master's thesis study I	1	2			○
		Master's thesis study II	2	2			○
		Master's thesis study III	2	2			○
		Sub-total (3subjects)		6	0		

\*Subjects offered in Symbiotic Systems Science and Technology Major

## V Other Information

### 1. Study Abroad through the Inter-University Exchange Agreement

The University has academic exchange agreements with 52 overseas universities through the Inter-University Exchange Agreement. In addition, it has student exchange agreements with 36 universities. It promotes exchanges through the student exchange and other programs for sending and receiving students.

For students studying at a university with which there is a student exchange agreement, 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 study abroad. Other costs associated with studying abroad, such as travel and living expenses, are generally paid by the student. If you are considering studying at a university with Student Exchange Agreements as shown below, please contact the International Center.

#### Universities with Student Exchange Agreements: 36 universities in 18 countries/regions\*

Country/Region	Partner institution	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>
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>
	Thuyloi University	<a href="http://en.tlu.edu.vn">http://en.tlu.edu.vn</a>
Australia	The University of Queensland	<a href="http://www.uq.edu.au">http://www.uq.edu.au</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 Hannover	<a href="https://www.uni-hannover.de">https://www.uni-hannover.de</a>
	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	<a href="http://www.ege.edu.tr">http://www.ege.edu.tr</a>

**1. The number of outgoing students, eligible undergraduate programs, etc. (all undergraduate and graduate programs are eligible)**

Partner institution	Number of students
Hebei University	Up to five students
Other partner institutions	Generally up to two students

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

**2. Eligibility for application**

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

- Students must belong to Fukushima University as of the date of application.
- Students must be able to earn credits or work on professional research activities at the destination university with a clear objective.
- Students applying to universities with language requirements must meet the language proficiency level set by the International Center.
- Students must be able to continue and complete their course at Fukushima University after returning from the destination university.

\*Research students, and students who have been studying at Fukushima University longer

than the minimum study period required for their course completion as of the date of application are ineligible for the application.

### 3. Duration of Study

Duration of the study abroad: six months to one year

Starting date varies depending on the destination university (August-October).

### 4. Schedule until Departure

The call for applications for Academic Year 2019 is as follows. The call will be posted to the bulletin board at the International Center and its website. Please note that the schedule may change.

Early November 2020–January 31, 2020	Application submission
Early to mid-February 2021	Screening interviews
Late February 2021	Students are nominated
March–July 2021	Preparation period for student exchange (Obtaining the visa, ordering the air ticket)
Late July 2021	Information sessions on crisis management, scholarship procedure, etc.
August–October 2021	Departure for destination universities

\* 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 or the Fukushima University Student Education Assistance Fund. Although the amount of the grant differs between regions, it ranges between ¥30,000 and ¥100,000 per month.

#### ◆International Center◆

Lecture Building S 1<sup>st</sup> floor (Monday-Friday 9 : 00-12 : 30 / 13 : 30—17 : 00)

TEL: 024-503-3066, 3067

E-mail: ryugaku@adb.fukushima-u.ac.jp

## 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 Affairs.
- (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) Announcements 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 Master's 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, 08:30–20:30

#### **(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. Symbiotic Systems Science and Technology Major: 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. Environmental radioactivity Science Major : 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 areas 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 are required to take class subjects prescribed in Appended Table 1 based on the coursework criteria prescribed in Appended Table 2 and students in the doctoral program are required to take class subjects prescribed in Appended Table 3 based on the coursework criteria prescribed in Appended Table 4. However, those who wish 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 class subjects regardless of the year of enrollment prescribed in Appended Table 1 and 3.

2 When deemed necessary by the thesis supervisor, students can take class subjects 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 10 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 10 credits, and may be included in the credits number based on the coursework criteria prescribed in Paragraph 1.

4 When deemed necessary by the thesis supervisor, students in the master's program may take class subjects 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 class subjects 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.

(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 class subjects 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 class subjects 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 dissertation 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 class subjects, who carry the necessary number of credits to complete the master's program or doctoral program, and who have submitted the thesis (in the master's program) or the dissertation (in the doctoral program).

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

(The Center for the Promotion of Research Project-Based Practical Education)

Article 14 The Center for the Promotion of Research Project-Based Practical Education shall be established within this Graduate School.

2 Policies concerning the preceding paragraph shall be prescribed separately.

(Miscellaneous Provisions)

Article 15 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 16 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.

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 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.

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 2018 onward. For students whose enrollment continues from March 31, 2020, the provisions then in force shall remain applicable.

## **Arrangement in the Graduate School of Fukushima University Concerning Enrollment in Class Subjects in Other Graduate Schools**

(Summary)

1 The enrollment in class subjects in other graduate schools at the Graduate School of Fukushima University shall be stipulated by this arrangement, in addition to Article 22 of the Academic Policies of the Graduate School of Fukushima University; Article 9, Paragraph 2 of the Policies of the Fukushima University Graduate School of Human Development and Culture; Article 5, Paragraph 2 of the Policies of Fukushima University Graduate School of Public Policy and Regional Administration; Article 7, Paragraph 3, and Article 8 of the Policies of the Fukushima University Graduate School of Economics; and Article 7, Paragraph 2 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology.

(Enrollment in Class Subjects in Other Graduate Schools and its Permission)

2 Students who desire to take class subjects in other graduate schools based on the guidance provided by the thesis supervisor shall obtain permission from the course instructor in advance, and then submit a request to the Dean of the Graduate School in which the student is enrolled.

(2) The Dean of the Graduate School who receives the request in the preceding paragraph may approve the enrollment upon discussion with the dean(s) of relevant graduate school(s).

(Class subjects in other Graduate Schools that students may take)

3 The class subjects in other Graduate Schools that students may take are the class subjects offered during the same academic year. However, the following class subjects shall be excluded.

① Research on topic, practical exercises, and subjects related to practical research for the Human Development and Culture.

② Seminar, Optional Subject Seminar, Region-focussed Research, Introduction to Public Policy and Regional Administration, Primary Seminar, and Practical Work on Specified Issues for the Public Policy and Regional Administration

③ Thesis special seminar, Introduction to Research Seminar, practical seminar, and Seminar for Research Projects for the Economics.

④ Master's Thesis Study, Community-based Practical Research, class subjects for the doctoral program for the Symbiotic Systems Science and Technology.

(Coursework Criteria)

4 Credits earned in other graduate schools may be included in the credits required for program completion according to the stipulations of each graduate school.

Supplementary Provisions

This arrangement shall become effective on April 1, 1994.

Supplementary Provisions

This arrangement shall become effective on April 1, 2008.

Supplementary Provisions

1. This arrangement shall become effective on April 1, 2009.
2. With regard to the provisions 1 and 3 concerning the students whose enrollment continues from March 31, 2009, the provisions then in force shall remain applicable notwithstanding the arrangement concerning enrollment in class subjects of other graduate schools in the Graduate School of Fukushima University that follows the revision by this arrangement.

Supplementary Provisions

This arrangement shall become effective on April 1, 2010.

## **Computation of Credits Earned in Other Graduate Schools in Coursework Criteria**

- 1 The credits earned through the “Arrangement in Graduate School of Fukushima University Concerning Enrollment in Class Subjects in Other Graduate Schools” shall count toward the number of credits in the elective category of the coursework criteria prescribed in Appended Table 2 of the Policies of the Graduate School of Symbiotic Systems Science and Technology for the Master’s program in the Symbiotic Systems Science and Technology Major, and shall not count toward the credits required for program completion included in the coursework criteria prescribed in Appended Table 6 for the master’s program in the Environmental Radioactivity Science Major.

### **Supplementary Provisions**

This computation shall become effective on April 1, 2008.

### **Supplementary Provisions**

This computation shall become effective on April 1, 2019.

## **Rules in the Graduate School of Symbiotic Systems Science and Technology Concerning Registration for Class Subjects in Other Major**

Article 1 These rules stipulate necessary matters concerning the registration for class subjects in other major between the Master's program in the Symbiotic Systems Science and Technology Major and the Environmental Radioactivity Science Major of Fukushima University Graduate School of Symbiotic Systems Science and Technology.

Article 2 Students who desire to take class subjects in other major based on the guidance provided by the thesis supervisor shall obtain approval from the course instructor in advance, and then notify the office in charge of educational affairs during the designated period. However, it does not apply in case students belong to the Environmental Radioactivity Science Major take the class subjects offered for the Master's program in the Symbiotic Systems Science and Technology Major prescribed in Appended Table 5 of the Policies of the Graduate School of Symbiotic Systems Science and Technology.

Article 3 The class subjects in other major that students may take are the class subjects offered during the same academic year, excluding the following class subjects.

- ① Master's Thesis Study, Science and Engineering Seminar, Community-based Practical Research, class subjects for the doctoral program of the Symbiotic Systems Science and Technology Major.
- ② Master's Thesis Study, practicum classes, experiment/ exercise classes of the Environmental Radioactivity Science Major.

Article 4 The computation of credits earned in other major shall be as described in the items below.

- ① For the Master's program in the Symbiotic Systems Science and Technology Major, the credits earned in other major shall count toward the number of credits in the elective category of the coursework criteria prescribed in Appended Table 2 of the Policies of the Graduate School of Symbiotic Systems Science and Technology.
- ② For the master's program in the Environmental Radioactivity Science Major, excluding the class subjects offered for the Master's program in the Symbiotic Systems Science and Technology Major prescribed in Appended Table 5 of the Policies of the Graduate School of Symbiotic Systems Science and Technology, the credits earned in other major shall not count toward the credits required for program completion included in the coursework criteria prescribed in Appended Table 6.

### Supplementary Provision

These rules shall become effective on April 1, 2018 and be applied to the students admitted for Academic Year 2018 onward.

## **Rules Concerning Master's Thesis**

Article 1 These rules stipulate necessary matters concerning the creation of the Master's 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 Master's Thesis shall receive the guidance of, in principle, the same thesis supervisor for two 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 the "Master's Thesis Topic Notification" (designated form) discussed in next Article is submitted.

Article 3 The student must select a Master's Thesis topic upon receiving the guidance of the thesis supervisor, and submit it using the "Master's Thesis Topic Notification" (designated form) to the Educational Affairs Division by November 30 (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 May 15 (two days after this date if it is Saturday; the following day if it is Sunday).

Article 4 The student must submit one copy of the Master's Thesis along with one copy of the Master's Thesis Abstract (designated form) to the Educational Affairs Division by January 20 (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 the September Candidates, the submission deadline shall be July 1 (two days after this date if it is Saturday; the following day if it is Sunday).

Article 5 The Master's 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.

2 The thesis supervisor discussed in the preceding paragraph shall serve as the chief examiner and the faculty members of this Graduate School shall serve as sub-examiners.

3 If deemed particularly necessary by the Graduate School Committee, the student may add the faculty members and individuals of other graduate schools or graduate programs, research institutions, and organizations to the Review Committee notwithstanding the policy in the preceding paragraph.

Article 6 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 Master's Thesis after the completion of the review of the Master's Thesis.

2 The Final Examination shall be administered by grouping students into their respective field.



3 The review of the Master's Thesis and the Final Examination shall be completed by February 20 (two days after this date if it is Saturday; the following day if it is Sunday). For the September Candidates, the review and the exam shall be completed by August 20 (two days after this date if it is Saturday; the following day if it is Sunday).

Article 7 The student must assemble the Master's Thesis and the Master's Thesis Abstract (designated form) for binding into a single copy to be submitted to the Educational Affairs Division by March 20 (two days after this date if it is Saturday; the following day if it is Sunday). For the September Candidates, the submission deadline shall be September 20 (two days after this date if it is Saturday; the following day if it is Sunday).

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

#### Supplementary Provisions

- 1 These rules shall become effective on July 14, 2010.
- 2 The Rules for the Thesis (created on April 1, 2008) shall be repealed.

#### Supplementary Provisions

These rules shall become effective on October 19, 2011.

## **Master's 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 related studies relevant to the thesis research and explicitly situate itself in the context of the findings and unanswered questions in such studies. Furthermore, sources must be properly cited.

### **(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 or beneficial, and help 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 the Change of Thesis Supervisor**

April 8, 2009

The Symbiotic Systems Science and Technology Graduate School Committee

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 research due to domestic training, overseas training, 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" 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 Extended-Term Students**

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

(Summary)

Article 1 These regulations stipulate necessary matters concerning extended-term students 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 extended-term student status 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 extended-term students must submit a request to the Dean of the Graduate School before the designated deadline before starting the extended study. They must attach the documents described in the items below for their request:

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

(Approval)

Article 4 The approval for the extended-term students 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.

(Extended-Study Period)

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

(Extension and Shortening)

Article 7 The extension or shortening of the approved extended-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 Extended-Study Period (Appended Form 3). However, students who are enrolled in the final year of their extended-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 an extended-term student, 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 extended-term students 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 September 4, 2012.

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

Created on: April 1, 2008

Revised on: April 1, 2010

(Summary)

Article 1 These detailed regulations stipulate necessary matters concerning Fukushima University Graduate School of Symbiotic Systems Science and Technology extended-term students (hereafter, “extended-term students”) as per Article 10 in the Regulations Concerning Fukushima University Graduate School Extended-Term Students (hereafter, “Regulations”)

(Course Registration)

Article 2 The maximum number of credits an extended-term student 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 class subjects.

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 extended-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 2members of the Faculty Steering Meeting
- 2 2members 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.

## **Rules in the Graduate School of Symbiotic Systems Science and Technology Concerning the Registration for Undergraduate Class Subjects**

Article 1 These rules stipulate necessary matters concerning the registration for undergraduate class subjects as per Article 7, Paragraph 4 of the Policies of the Fukushima University Graduate School of Symbiotic Systems Science and Technology (hereafter, “Graduate School Policies”).

Article 2 “Being deemed necessary by the thesis supervisor” shall refer to when undergraduate class subjects are beneficial to the student for conducting research or when such subjects do not interfere with research and are required for the acquisition of external certification examinations.

Article 3 The class subjects of the undergraduate program that graduate students are allowed to register for shall refer to class subjects in specialized areas and class subjects for obtaining teacher’s license offered through the undergraduate program of Faculty of Symbiotic Systems Science. However, students are not allowed to register for Laboratory and Field Practicum I or II, Undergraduate Thesis I or II, class subjects offered by other faculties, or the following class subjects for obtaining teacher’s license offered through the undergraduate program of Faculty of Symbiotic Systems Science: teaching practice, pre- and post-guidance for the teaching practice, practical training for teaching profession.

Article 4 Registered credits shall not exceed eight credit hours per year. The credits the student earns are undergraduate credits and shall not count toward the credits based on the coursework criteria of the Graduate School. However, registered credits of an extended-term student shall not exceed four credits per year (six credits in case of the completion period of three years).

Article 5 Students shall obtain approval in advance from the thesis supervisor and the faculty member instructing the preferred undergraduate class subject, and then notify the office in charge of educational affairs during the designated period.

### Supplementary Provision

These rules shall become effective on April 1, 2010 and be applied to the students admitted for Academic Year 2010 onward.

### Supplementary Provision

1. These rules shall become effective on April 1, 2019.
2. The rules in the Graduate School of Symbiotic Systems Science and Technology concerning the registration for undergraduate class subjects 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.

## **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

(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 six months or one year for the master’s program of the Symbiotic Systems Science and Technology Major and the master’s program of the Environmental Radioactivity Science Major, and by six months, one year, 18 months, or two years for the doctoral program of the Symbiotic Systems Science and Technology Major.

(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 Faculty 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 dissertation 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 in the Symbiotic Systems Science and Technology Major, Advanced Research on Symbiotic Systems Science of the students in the doctoral program in the Symbiotic Systems Science and Technology Major, and Master's Thesis Study III of the students in the master's program in the Environmental Radioactivity Science Major shall be awarded only to those students who have passed the review of the master's thesis or doctoral dissertation.

(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.

## **VII Diploma Policy, Curriculum Policy**

### **【Diploma Policy for Environmental Radioactivity Science Major】**

The Master's program with a major in Environmental Radioactivity Science aims to prepare students to perform a comprehensive range of tasks, such as measurement, monitoring of design, control, prediction, and evaluation of natural and anthropogenic radionuclides, with a medium- to long-term perspective, and render them ready to make an active contribution in fields such as environmental protection, prediction/evaluation, environmental remediation, nuclear decommissioning, interim storage of radioactive soil and waste, and remediation. Students are also expected to become able to utilize their knowledge and expertise to solve issues in society and provide practical expertise as specialists. During the course of the program, students will be required to acquire the following attitude, knowledge, and abilities

1. Attitude to try to understand events and phenomena in an interdisciplinary framework of Environmental Radioactivity Science, a discipline that integrates various academic fields from multi-faceted perspectives, without being bound or biased by the framework of traditional academic disciplines, and the ability to effectively communicate with experts from other fields.
2. Specialized knowledge and skills necessary to solve issues in their chosen fields.
3. Ability to apply acquired specialized knowledge and skills to solve actual issues and challenges.
4. Ability to convey their specialized knowledge and skills, as well as their research results, to others.

To earn a Master's degree in this Major, students are required to acquire the following knowledge and abilities:

[In the field of Ecology]

Specialized knowledge, techniques, and skills acquired through research in radioecology, as well as the sciences from which it emerged (i.e., ecology, biology, etc.), and the capability to apply the acquired knowledge and solve challenges in a practical manner.

[In the field of Modeling]

Specialized knowledge, techniques, and skills acquired through research in radiation modeling, as well as in sciences such as geoscience and computer modeling, and the capability to apply acquired knowledge to solve challenges in the radiological sciences in a practical manner.

[In the field of Measurement]

Specialized knowledge, techniques, and skills acquired through research regarding radiation measurement, as well as research in fields such as chemistry, physics, mechanical engineering, and electrical engineering, and the capability to apply acquired knowledge and solve challenges in a practical manner.

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## **【Curriculum Policy for Environmental Radioactivity Science Major】**

This program provides students who have diverse background knowledge in fields such as ecology, biology, geoscience, mathematical modeling, chemistry, physics, mechanical engineering, electrical engineering, etc. with specialized education offering comprehensive knowledge and technical training to enable them to develop expertise in the multi-disciplinary field of Environmental Radioactivity Science.

To clarify the goals to be achieved in this major, the curriculum is divided into three specialized fields: Ecology, Modeling, and Measurement.

Each of these fields offer many subjects, which form the core of education, to create professionals in two clearly defined phases: Basic and Deepening phases.

In order to create professionals who are well-equipped with practical knowledge and skills in Environmental Radioactivity Science, this program takes advantage of the proximity to the area affected by the Fukushima accident in 2011 and the close relationship with international research institutes and universities that Fukushima University has developed to offer Practical Subjects in the Basic Phase. Students will participate in actual research projects being conducted in Fukushima or Chernobyl, etc. and learn the methods and techniques actually employed in research in Environmental Radioactivity Science.

Students will first learn general and overarching knowledge on environmental radioactivity in the Basic Phase (Common Subjects and Practical Subjects) and then will deepen their respective specialization within environmental radioactivity in Deepening Phase courses (Applied Subjects and Master's Thesis Study). Below is the outline of Basic Phase and Deepening Phase subjects. All these courses will include discussion-style classes to help develop communicative ability.

[Basic Phase]

Students learn basic knowledge on environmental radioactivity in Common Subjects. They then learn how to apply the knowledge through Practical Subjects in a comprehensive and practical manner by participating in actual research and fieldwork performed in Fukushima or Chernobyl, etc.

[Advanced Phase]

Students learn applied and in-depth knowledge in Applied Subjects in three areas: Ecology, Modeling, and Measurement. In the Master's Thesis Study, students conduct thesis research of their own initiative, exploring a solution to an issue in their respective specialization. They document their research results in a thesis and defend it in front of the thesis committee. The evaluation of a thesis will be based on the relevance and clarity of the research theme, extensiveness of literature review and citations, appropriateness of research methods, appropriateness of interpretation of research results, logical construction of the thesis, innovativeness or usefulness of the research, and observance of ethical standards.

## **Educational Affairs Division**

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

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FAX 024 - 548 - 8224

### **Hours of Operation**

Monday – Friday	9 : 0 0 – 1 2 : 3 0 , 1 3 : 3 0 – 1 7 : 0 0 1 7 : 0 0 – 2 0 : 3 0 (on days classes are taught)
Saturday, Sunday, Public Holidays	

\* The office may be closed on some days during the long breaks and the 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 No.	
Name	