

# **Graduate School of Science, Course of Science**

## **Master's Program**

### **Diploma Policy (Policy on the conferring of degrees)**

Persons who have earned the prescribed credits under the curricula of the fields of the Graduate School Master's Program, and whose submitted Master's thesis has been screened and accepted, will be judged as having acquired the following capabilities, and will be granted a Master's degree (Science).

1. Judgment and practical ability as an independent citizen of sound sense
  - (1) Have acquired the capabilities to present, debate, and document their research and ideas, using logical and accurate Japanese
  
2. International sensibilities and communication capabilities
  - (1) Have acquired fundamental communication capabilities in English
  - (2) Understand English writings on themes involving specialties, and have acquired the capability for expression in English writing
  
3. Expert knowledge and skills to address the issues of the age and the demands of society
  - (1) Have acquired the ability to establish working hypotheses and methodologies for problems in research that are difficult to resolve with current knowledge, and to undertake the resolution of these
  - (2) Possess the desire to play a central role in actively and persistently undertaking problem resolution and technological development on the various front lines of technology in society

### **Curriculum Policy (Policy on organization and implementation of curricula)**

In order to develop human resources who have acquired power of expression and logical thinking ability founded on expert and fundamental knowledge in the fields of the Course of Science, and who, through education and research, are equipped with the following capabilities for engagement in activities at the center of education, research, and development in fields related to the Course of Science, the Graduate School Master's Program has established a curriculum policy as follows.

1. Organization and implementation of curricula
  - (1) The Master's Program conducts education and research with the Faculty of Science as its base. Restated, the five Fields of mathematics, physics, information sciences, chemistry, and biological sciences placed under the Course of Science are each based in the four Departments – Department of Mathematics and Physics, Department of Information Sciences, Department of Chemistry, and Department of Biological Sciences. The educational content of the Fields deepens the educational content of the Faculty, with the breadth and framework of the educational content modified according to purpose.
  - (2) The Master's Program has prepared classroom subjects for the acquisition of fundamental knowledge, and has established "Special Exercises" and "Special Research" as required subjects, with an emphasis on the development of practice to make full use of fundamental knowledge. In addition, students can select study subjects in other Courses in order to pursue studies and research outside the boundaries of their Course. The Master's Program places effort on the English education that is indispensable in the age of internationalization and, while nurturing the ability to read European and American textbooks, specialized texts, and research papers, works to improve conversational ability.

## 2. Educational methods and evaluation

- (1) For the smooth advancement of education and research, the Master's Program employs measures including the following. At the start of each academic year, the Master's Program creates a research plan and establishes a multiple instruction system consisting of not only an academic supervisor but also two to three advisors (co-supervisors).
- (2) Through TA (Teaching Assistant) positions, the Doctoral Program offers opportunities for gaining experience that enhances capabilities as an educator.
- (3) The Master's Program effectuates a credits system through strict application of academic performance evaluations. The Master's Program evaluates capability to resolve the research theme, and evaluates presentation and communication capabilities, through interim screening and main screening of research within the Master's Program, including planning, execution, and presentation, and further through performance of presentations at academic meetings. For the purpose of fairness and strictness, the Master's Program conducts evaluations through three or more expert academic staff.

## **Admissions Policy**

### 1. The capabilities fostered by a graduate school education

- (1) The Master's Program in this school develops students equipped with theoretical reasoning and communication skills built on the foundation of a Course of Science and specialist knowledge in each field, and with the capability to work in roles focusing on education, research, and development in fields related to their Course of Science.

### 2. Entrants sought by the Course

- (1) Persons who possess basic scholarship in fields of expertise in natural science
- (2) Persons who understand and unravel the providence of nature, and who possess a desire to advance research and deepen fundamental knowledge from fundamental or applied perspectives
- (3) Persons who possess the English capability at a level able to understand textbooks in fields of expertise written in English

### 3. Evaluation of capabilities through university (selection method)

- (1) In order to evaluate fundamental knowledge in the fields of expertise in each Field and the English reading comprehension ability cultivated at university, written examinations related to English and to applicants' expertise will be conducted.
- (2) Oral examinations will be conducted to evaluate research capabilities.

## **Graduate School of Science, Course of Science**

### **Doctoral Program**

#### **Diploma Policy (Policy on the conferring of degrees)**

Persons who have earned the prescribed credits under the curriculum of the fields of the Graduate School Doctoral Program, and whose submitted Doctoral thesis has been screened and accepted, will be judged as having acquired the following capabilities, and will be granted a Doctor's degree (Science).

#### 1. Judgment and practical ability as an independent citizen of sound sense

- (1) Have acquired a variety of capabilities, including research capabilities developed in the Master's Program, and the capability to set the research theme itself in particular.

## 2. International sensibilities and communication capabilities

- (1) Nurture capabilities to present the significance of research outcomes as viewed from a broad perspective, and have acquired the capabilities to engage in research independently
- (2) Have acquired the capabilities to write research papers in English

## 3. Expert knowledge and skills to address the issues of the age and the demands of society

- (1) Have acquired the capabilities to broadly comprehend relationships with the peripheral fields that form the backdrop to research, also taking the potential significance inherent in research outcomes into account
- (2) Possess the desire to play a central role in actively and persistently undertaking problem resolution and technological development on the various front lines of technology in society

### **Curriculum Policy (Policy on organization and implementation of curricula)**

In order to develop human resources who have acquired power of expression and logical thinking ability founded on expert and fundamental knowledge in the fields of the Course of Science, and who, through education and research, are equipped with the following capabilities for engagement in activities at the center of education, research, and development in fields related to the Course of Science, the Graduate School Doctoral Program has established a curriculum policy as follows.

#### 1. Organization and implementation of curricula

- (1) With special research and special exercises under the guidance of academic advisors at the center of education and research, the Doctoral Program strives to further enhance research capabilities and develop researchers who can pursue research independently.

#### 2. Educational methods and evaluation

- (1) For the smooth advancement of education and research, the Doctoral Program employs measures including the following. At the start of each academic year, the Doctoral Program creates a research plan and establishes a multiple instruction system consisting of not only an academic supervisor but also two to three advisors (co-supervisors).
- (2) Through TA (Teaching Assistant) positions, the Doctoral Program offers opportunities for gaining experience that enhances capabilities as an educator.
- (3) The Doctoral Program effectuates a credits system through strict application of academic performance evaluations. The Doctoral Program evaluates capability to resolve the research theme, and evaluates presentation and communication capabilities, through interim screening and main screening of research within the Doctoral Program, including planning, execution, and presentation, and further through performance of presentations at academic meetings. For the purpose of fairness and strictness, the Doctoral Program conducts evaluations through three or more expert academic staff.

### **Admissions Policy**

#### 1. The capabilities fostered by a graduate school education

- (1) The Doctoral Program in this school develops students equipped with theoretical reasoning and communication skills built on the foundation of a Course of Science and specialist knowledge in each field, and with the capability to work in roles focusing on education, research, and development in fields related to their Course of Science.

## 2. Entrants sought by the Course

- (1) Persons who possess assured scholarship in fields of expertise in natural science
- (2) Persons who possess a desire to independently uncover and resolve new problems, and who aspire to be active in instructive roles in a technology-based society
- (3) Persons who possess the English reading comprehension ability at a level able to read academic research papers in fields of expertise written in English, and who possess a desire to acquire English composition ability at a level capable of writing research papers

## 3. Evaluation of capabilities through Master's program (selection method)

- (1) Written examinations will be conducted to evaluate the English reading comprehension ability cultivated in Master's program research.
- (2) Oral examinations concerning the content of the Master's thesis will be conducted to evaluate the potential capability for writing a Doctoral thesis.

# **Graduate School of Science, Course of Science, Field of Mathematics Master's Program**

## **Diploma Policy (Policy on the conferring of degrees)**

Persons who have earned the prescribed credits under the curriculum of the Field's Master's Program, and whose submitted Master's thesis has been screened and accepted, will be judged as having acquired the following capabilities, and will be granted a Master's degree (Science).

### 1. Judgment and practical ability as an independent citizen of sound sense

- (1) Have acquired the capabilities to systematically comprehend expert and fundamental knowledge of the field of expertise
- (2) Have acquired the capabilities to present their own research and ideas using logical and accurate language

### 2. International sensibilities and communication capabilities

- (1) Have acquired the capability to communicate and receive information on themes involving specialties, in a form that is also applicable internationally
- (2) Have acquired the capabilities to create and independently execute research plans grounded in expert and fundamental knowledge of the field of expertise

### 3. Expert knowledge and skills to address the issues of the age and the demands of society

- (1) Have acquired the capabilities to play a central role in various front lines related to the field of expertise, and to actively and persistently undertake problem resolution and technological development
- (2) Have acquired the capabilities to apply expert knowledge of fields to independently devise ways to resolve problems facing research

## **Curriculum Policy (Policy on organization and implementation of curricula)**

In order to develop human resources who understand the frontiers of research in fields of mathematics, who have acquired capabilities for mathematical processing, and who are able to apply these in science- and technology-related fields in society and in educational institutions, the Field's Master's Program has established a curriculum policy under the guidelines shown below.

### 1. Organization and implementation of curricula

- (1) The Master's Program conducts education and research under an established curriculum that sets its sights on research themes in the fields of the Graduate School of Science, Field of Mathematics.
- (2) The Master's Program deploys expert academic staff in fields of mathematics, and implements a curriculum that enables wide-ranging studies not limited to mathematics.

## 2. Educational methods and evaluation

- (1) In "Special Research," the Master's Program provides advice through advisors as well as through academic supervisors, conducts checks of the education and research instruction system for the thesis writing process, and performs checks of educational content, methods, etc. matched to human resource development objectives.
- (2) Through TA (Teaching Assistant) positions, the Master's Program offers opportunities for gaining experience that enhances capabilities as an educator.
- (3) The Master's Program effectuates a credits system through strict application of academic performance evaluations. The Master's Program evaluates capability to resolve the research theme, and evaluates presentation and communication capabilities, through interim screening and main screening of research within the Master's Program, including planning, execution, and presentation, and further through performance of presentations at academic meetings. For the purpose of fairness and strictness, the Master's Program conducts evaluations through three or more expert academic staff.

## **Admissions Policy**

### 1. The capabilities fostered by a graduate school education

- (1) Develops human resources who have acquired the fundamentals of the mathematics that are the foundation of science, and who can apply that knowledge to actively undertake the resolution of new problems.

### 2. Entrants sought by the Field

- (1) Persons who possess fundamental knowledge in the field of mathematics
- (2) Persons who possess a desire to acquire the capability to apply the above fundamental knowledge to independently resolve a wide range of problems that arise

### 3. Evaluation of capabilities through university (selection method)

- (1) Selection of entrants will be based on the fundamental knowledge of mathematics acquired through university graduation, and will take into account sense of purpose toward studies after admission and proactive desire to engage in problem resolution.

## **Graduate School of Science, Course of Science, Field of Mathematics**

### **Doctoral Program**

#### **Diploma Policy (Policy on the conferring of degrees)**

Persons who have earned the prescribed credits under the curriculum of the Field's Doctoral Program, and whose submitted Doctoral thesis has been screened and accepted, will be judged as having acquired the following capabilities, and will be granted a Doctor's degree (Science).

### 1. Judgment and practical ability as an independent citizen of sound sense

- (1) Have acquired the capabilities to evaluate the significance of research, based on an assessment of conditions in their specialty and related fields

(2) Have acquired the capabilities to discern suitable research themes and to draft rough research plans

2. International sensibilities and communication capabilities

(1) Have acquired the capabilities to share problems globally and advance research internationally

(2) Have acquired the capabilities to advance research independently and communicate the outcomes of research to the world

3. Expert knowledge and skills to address the issues of the age and the demands of society

(1) Have acquired the capabilities to play a central role in the field of expertise and related fields, and in problem resolution and technological development

(2) Have acquired practical capabilities to resolve existing problems with new ideas, and to develop new research

**Curriculum Policy (Policy on organization and implementation of curricula)**

In order to develop human resources who can contribute to the development of mathematics as noted in its educational objectives, the Field's Doctoral Program has established a curriculum policy under the guidelines shown below.

1. Organization and implementation of curricula

(1) The Doctoral Program conducts education and research under an established curriculum that sets its sights on research themes in the fields of the Graduate School of Science, Field of Mathematics.

(2) The Doctoral Program deploys expert academic staff in fields of mathematics, and implements a curriculum that enables wide-ranging studies not limited to mathematics.

2. Educational methods and evaluation

(1) In "Special Research," the Doctoral Program provides advice through advisors as well as academic supervisors when necessary, conducts checks of the education and research instruction system for the thesis writing process, and performs checks of educational content, methods, etc. matched to human resource development objectives.

(2) Through TA (Teaching Assistant) positions, the Doctoral Program offers opportunities for gaining experience that enhances capabilities as an educator.

(3) The Doctoral Program effectuates a credits system through strict application of academic performance evaluations. The Doctoral Program evaluates capability to resolve the research theme, and evaluates presentation and communication capabilities, through interim screening and main screening of research within the Doctoral Program, including planning, execution, and presentation, and further through performance of presentations at academic meetings. For the purpose of fairness and strictness, the Doctoral Program conducts evaluations through three or more expert academic staff.

**Admissions Policy**

1. The capabilities fostered by a graduate school education

(1) Develops human resources who have acquired the fundamentals of the mathematics that are the foundation of science, and who can apply that knowledge to actively undertake the resolution of new problems.

2. Entrants sought by the Field

- (1) Persons who possess fundamental and expert knowledge in the field of mathematics
  - (2) Persons who possess a desire to acquire the capability to apply the above knowledge to independently resolve various problems that arise
3. Evaluation of capabilities through Master's program (selection method)
- (1) Selection of entrants will be based on the expert knowledge of mathematics acquired through completion of a Master's program, and will take into account sense of purpose toward studies after admission and proactive desire to engage in problem resolution.

## **Graduate School of Science, Course of Science, Field of Physics**

### **Master's Program**

#### **Diploma Policy (Policy on the conferring of degrees)**

Persons who have earned the prescribed credits under the curriculum of the Field's Master's Program, and whose submitted Master's thesis has been screened and accepted, will be judged as having acquired the following capabilities, and will be granted a Master's degree (Science).

1. Judgment and practical ability as an independent citizen of sound sense
  - (1) Have acquired the capabilities to present their own research and ideas using logical and accurate Japanese
2. International sensibilities and communication capabilities
  - (1) Understand English concerning themes involving their specialty, and have acquired the capability for communication and expression in writing
3. Expert knowledge and skills to address the issues of the age and the demands of society
  - (1) Have acquired the capabilities to systematically comprehend expert and fundamental knowledge in the field of major
  - (2) Have acquired the capabilities to create and independently execute research plans grounded in expert and fundamental knowledge of the field of major
  - (3) Have acquired the capabilities to apply expert knowledge in fields to independently devise ways to resolve problems facing research
  - (4) Have acquired the capabilities to play a central role in various front lines related to the field of major, and to actively and persistently undertake problem resolution and technological development

#### **Curriculum Policy (Policy on organization and implementation of curricula)**

In order to develop human resources who possess knowledge and skills concerning the fundamentals and application of physics, along with the capabilities for discovery, analysis, modeling, and resolution of problems, the Field's Master's Program has established a curriculum policy under the guidelines shown below.

1. Organization and implementation of curricula
  - (1) The Master's Program is founded within the Graduate School of Science, Field of Physics, and conducts education and research under a deeply linked curriculum.
  - (2) The Master's Program deploys expert academic staff in fields of physics, and, linking to the curriculum of the closely related Field of Mathematics, implements a curriculum that mutually enables organic and systematic study.

## 2. Educational methods and evaluation

- (1) In "Special Research," the Master's Program provides advice through advisors as well as through academic supervisors, conducts checks of the education and research instruction system for the thesis writing process, and performs checks of educational content, methods, etc. matched to human resource development objectives.
- (2) The Master's Program checks the progress of research once per year through Special Research interim presentations.
- (3) Through TA (Teaching Assistant) positions, the Master's Program offers opportunities for gaining experience that enhances capabilities as an educator.
- (4) The Master's Program effectuates a credits system through strict application of academic performance evaluations. The Master's Program evaluates capability to resolve the research theme, and evaluates presentation and communication capabilities, through interim screening and main screening of research within the Master's Program, including planning, execution, and presentation, and further through performance of presentations at academic meetings. For the purpose of fairness and strictness, the Master's Program conducts evaluations through three or more expert academic staff.

## **Admissions Policy**

### 1. The capabilities fostered by a graduate school education

- (1) Develops human resources who have acquired the fundamentals of the physics that are the roots of science, and who can demonstrate the potential to apply that scientific knowledge to resolving problems in science- and technology-related fields in the real world.

### 2. Entrants sought by the Field

- (1) Persons who possess fundamental knowledge in the field of physics
- (2) Persons who possess a desire to acquire the capability to apply the above fundamental knowledge to independently resolve a wide range of problems that arise

### 3. Evaluation of capabilities through university (selection method)

- (1) Selection of entrants will emphasize the fundamental knowledge of physics acquired through university graduation, and will also take into account sense of purpose toward studies after admission and proactive desire to engage in problem resolution using physics.

## **Graduate School of Science, Course of Science, Field of Physics**

### **Doctoral Program**

#### **Diploma Policy (Policy on the conferring of degrees)**

Persons who have earned the prescribed credits under the curriculum of the Field's Doctoral Program, and whose submitted Doctoral thesis has been screened and accepted, will be judged as having acquired the following capabilities, and will be granted a Doctor's degree (Science).

### 1. Judgment and practical ability as an independent citizen of sound sense

- (1) Have acquired the capabilities to further develop and advance research conducted in the Master's Program

### 2. International sensibilities and communication capabilities

- (1) Have acquired the capabilities to grasp and present the significance of research outcomes from



a broad perspective

- (2) Have acquired the capabilities to write research papers in English
- (3) Have acquired the capabilities for presentation and exchange of information using English

3. Expert knowledge and skills to address the issues of the age and the demands of society

- (1) Have acquired the capabilities to broadly comprehend relationships with peripheral fields that form the backdrop to research, also taking the potential significance inherent in research outcomes into account
- (2) Have acquired the capabilities to independently pursue research
- (3) Have acquired the capabilities to play a central role in various front-lines related to the field of major, and to actively and persistently undertake problem resolution and technological development

### **Curriculum Policy (Policy on organization and implementation of curricula)**

In order to develop human resources who possess high-level knowledge and skills concerning the fundamentals and application of physics, along with the capabilities for discovery, analysis, modeling, and accurate resolution of problems, the Field's Doctoral Program has established a curriculum policy under the guidelines shown below.

1. Organization and implementation of curricula

- (1) The Doctoral Program deploys expert academic staff in fields of physics, and, linking to the curriculum of the closely related Field of Mathematics, implements a curriculum that mutually enables organic and systematic study.

2. Educational methods and evaluation

- (1) The Doctoral Program checks the progress of research once per year through Special Research interim presentations.
- (2) The Doctoral Program provides advice for "Special Research" through the multiple instruction system, conducts checks of the education and research instruction system for the thesis writing process, and performs checks of educational content, methods, etc. matched to the Course's human resource development objectives.
- (3) Through TA (Teaching Assistant) positions, the Doctoral Program offers opportunities for gaining experience that enhances capabilities as an educator.
- (4) The Doctoral Program effectuates a credits system through strict application of academic performance evaluations. The Doctoral Program evaluates capability to resolve the research theme, and evaluates presentation and communication capabilities, through interim screening and main screening of research within the Doctoral Program, including planning, execution, and presentation, and further through performance of presentations at academic meetings. For the purpose of fairness and strictness, the Doctoral Program conducts evaluations through three or more expert academic staff.

### **Admissions Policy**

1. The capabilities fostered by a graduate school education

- (1) Develops human resources who, standing atop a solid foundation in the physics that are the roots of science, have acquired the capability to resolve scientific and technological problems in society.

2. Entrants sought by the Field

- (1) Persons who possess assured scholarship in fields of expertise in physics
  - (2) Persons who possess a strong desire to put expert knowledge of physics to use in education, research, and development, and who aspire to instructional positions in fields of expertise in the future
  - (3) Persons who possess a desire to uncover and resolve new problems
  - (4) Persons who possess a desire to acquire English composition ability at a level capable of reading and writing research papers in English
3. Evaluation of capabilities through Master's program (selection method)
- (1) Selection of entrants will evaluate the expert knowledge of physics acquired through completion of a Master's program, as well as the strength of desire to deepen that knowledge and become involved in the development of fields of expertise as an independent researcher.

## **Graduate School of Science, Course of Science, Field of Information Sciences**

### **Master's Program**

#### **Diploma Policy (Policy on the conferring of degrees)**

Persons who have earned the prescribed credits under the curriculum of the Field's Master's Program, and whose submitted Master's thesis has been screened and accepted, will be judged as having acquired the following capabilities, and will be granted a Master's degree (Science).

1. Judgment and practical ability as an independent citizen of sound sense
  - (1) Have acquired the capabilities to present their own research and ideas logically and accurately
2. International sensibilities and communication capabilities
  - (1) Understand English concerning themes involving their specialty, and have acquired the capability for communication and expression in writing
3. Expert knowledge and skills to address the issues of the age and the demands of society
  - (1) Have acquired the capabilities to systematically comprehend expert knowledge of the field of major
  - (2) Have acquired the capabilities to create and independently execute research plans grounded in fundamental knowledge of the field of major
  - (3) Have acquired the capabilities to apply expert knowledge in fields to independently devise ways to resolve problems facing research
  - (4) Have acquired the capabilities to play a central role in various front lines related to the field of major, and to actively and persistently undertake problem resolution and technological development

#### **Curriculum Policy (Policy on organization and implementation of curricula)**

In order to educate human resources who possess knowledge and skills concerning the fundamentals and application of information science, along with the capabilities for discovery, analysis, modeling, and resolution of problems, the Field's Master's Program has established a curriculum policy under the guidelines shown below.

1. Organization and implementation of curricula
  - (1) The Master's Program is founded within the Faculty of Science, Department of Information

Sciences, and conducts education and research under a deeply linked curriculum.

- (2) The Master's Program deploys expert academic staff in computing system science, and implements an organically related curriculum.

## 2. Educational methods and evaluation

- (1) In "Special Research," the Master's Program provides advice through advisors as well as through academic supervisors, conducts checks of the education and research instruction system for the thesis writing process, and performs checks of educational content, methods, etc. matched to human resource development objectives.
- (2) The Master's Program checks the progress of research once per year through Special Research interim presentations.
- (3) Through TA (Teaching Assistant) positions, the Master's Program offers opportunities for gaining experience that enhances capabilities as an educator.
- (4) The Master's Program effectuates a credits system through strict application of academic performance evaluations. The Master's Program evaluates capability to resolve the research theme, and evaluates presentation and communication capabilities, through interim screening and main screening of research within the Master's Program, including planning, execution, and presentation, and further through performance of presentations at academic meetings. For the purpose of fairness and strictness, the Master's Program conducts evaluations through three or more expert academic staff.

## **Admissions Policy**

### 1. The capabilities fostered by a graduate school education

The Field of Information Sciences Master's Program confers knowledge in information science, and cultivates the capability to apply that knowledge to resolve problems in science- and technology-related fields in society.

### 2. Entrants sought by the Field

- (1) Persons who possess fundamental knowledge in information science
- (2) Persons who possess a desire to acquire the capability to apply the above fundamental knowledge to independently resolve a wide range of problems that arise
- (3) Persons who possess English capability at a level able to understand science research papers written in English, and have willingness to acquire the capability to write research papers in English.

### 3. Evaluation of capabilities through university (selection method)

- (1) In General Entrance Examinations and International Student Entrance Examinations, the basic scholarship necessary for study in the Field of Information Sciences will be evaluated on the basis of degree of achievement in studies at university.
- (2) In Special Entrance Examinations for Mature-Aged Applicants, the basic scholarship necessary for study in the Field of Information Sciences will be evaluated on the basis of degree of achievement in studies at university and performance as a working practitioner.

## **Graduate School of Science, Course of Science, Field of Information Sciences**

### **Doctoral Program**

### **Diploma Policy (Policy on the conferring of degrees)**

Persons who have earned the prescribed credits under the curriculum of the Field's Doctoral Program, and whose submitted Doctoral thesis has been screened and accepted, will be judged as having acquired the following capabilities, and will be granted a Doctor's degree (Science).

1. Judgment and practical ability as an independent citizen of sound sense

(1) Have acquired the capabilities to grasp and present the significance of research outcomes from a broad perspective

2. International sensibilities and communication capabilities

(1) Have acquired the capabilities to write research papers in English

(2) Have acquired the capabilities for presentation and exchange of information using English

3. Expert knowledge and skills to address the issues of the age and the demands of society

(1) Have acquired the capabilities to broadly comprehend relationships with peripheral fields that form the background to research, also taking the potential significance inherent in research outcomes into account

(2) Have acquired the capabilities to further develop and advance research conducted in the Master's Program

(3) Have acquired the capabilities to independently pursue research

(4) Have acquired the capabilities to play a central role in various front lines related to the field of major, and to actively and persistently undertake problem resolution and technological development

**Curriculum Policy (Policy on organization and implementation of curricula)**

In order to educate human resources who possess high-level knowledge and skills concerning the fundamentals and application of information science, along with the capabilities for discovery, analysis, modeling, and accurate resolution of problems, the Field's Doctoral Program has established a curriculum policy under the guidelines shown below.

1. Organization and implementation of curricula

(1) The Doctoral Program deploys expert academic staff in computing system science, and implements an organically related curriculum.

2. Educational methods and evaluation

(1) The Doctoral Program checks the progress of research once per year through Special Research interim presentations.

(2) The Doctoral Program provides advice for "Special Research" through the multiple instruction system, conducts checks of the education and research instruction system for the thesis writing process, and performs checks of educational content, methods, etc. matched to the Field's human resource development objectives.

(3) Through TA (Teaching Assistant) positions, the Doctoral Program offers opportunities for gaining experience that enhances capabilities as an educator.

(4) The Doctoral Program effectuates a credits system through strict application of academic performance evaluations. The Doctoral Program evaluates capability to resolve the research theme, and evaluates presentation and communication capabilities, through interim screening and main screening of research within the Doctoral Program, including planning, execution, and presentation, and further through performance of presentations at academic meetings. For the purpose of fairness and strictness, the Doctoral Program conducts evaluations through three or

more expert academic staff.

## **Admissions Policy**

### 1. The capabilities fostered by a graduate school education

The Field of Information Sciences Doctoral Program confers essential knowledges in information science, and cultivates the capability to apply that knowledge to resolve problems in science- and technology-related fields in society. It further confers solid, fundamental scientific knowledge for resolving technological problems in society, and cultivates the capability to stand atop that foundation and resolve various problems.

### 2. Entrants sought by the Field

(1) Persons who possess assured scholarship in fields of expertise in information science

(2) Persons who possess a strong desire to put expert knowledge of information science to use in education, research, and development, and who aspire to instructional positions in fields of expertise in the future

(3) Persons who possess a desire to uncover and resolve new problems

(4) Persons who possess a desire to acquire English composition ability at a level capable of reading and writing research papers in English

### 3. Evaluation of capabilities through Master's program (selection method)

(1) In General Entrance Examinations and International Student Entrance Examinations, the basic scholarship necessary for study in the Field of Information Sciences will be evaluated on the basis of degree of achievement in studies in a graduate school Master's program.

(2) In Special Entrance Examinations for Mature-Aged Applicants, the basic scholarship necessary for study in the Field of Information Sciences will be evaluated on the basis of degree of achievement in studies in a graduate school Master's program and performance as a working practitioner.

## **Graduate School of Science, Course of Science, Field of Chemistry**

### **Master's Program**

#### **Diploma Policy (Policy on the conferring of degrees)**

Persons who have earned the prescribed credits under the curriculum of the Field's Master's Program, and whose submitted Master's thesis has been screened and accepted, will be judged as having acquired the following capabilities, and will be granted a Master's degree (Science).

### 1. Judgment and practical ability as an independent citizen of sound sense

(1) Have acquired the capabilities to systematically comprehend expert fields of chemistry

(2) Have acquired the capabilities to create and independently execute research plans grounded in expert knowledge of chemistry

### 2. International sensibilities and communication capabilities

(1) Have acquired the capabilities to present their own research and ideas using logical and accurate Japanese

(2) Understand English concerning themes involving their specialty, and have acquired the capability for communication and expression in writing

### 3. Expert knowledge and skills to address the issues of the age and the demands of society

- (1) Have acquired the capabilities to apply expert knowledge of chemistry to independently devise ways to resolve problems facing research
- (2) Have acquired the capabilities to play a central role in various front lines related to chemistry, and to actively and persistently undertake problem resolution and technological development

### **Curriculum Policy (Policy on organization and implementation of curricula)**

In order to develop human resources who have acquired power of expression and logical thinking ability founded on fundamental knowledge of chemistry, and who are able to engage in activities at the center of education, research, and development in chemistry-related fields, the Field's Master's Program has established a curriculum policy under the guidelines shown below.

#### 1. Organization and implementation of curricula

- (1) The Master's Program is founded within the Faculty of Science, Department of Chemistry, and conducts education and research under a deeply linked curriculum.
- (2) The Master's Program conducts higher-level, expert education in chemistry upon the foundation of knowledge acquired through undergraduate education.
- (3) The Master's Program imparts the methods necessary to pursue new topics, through explanation of the background, significance, and further development of key research that forms the basis for contemporary chemistry.
- (4) In the Master's program, several classes are conducted in English every two years to accommodate internationalization.

#### 2. Educational methods and evaluation

- (1) The Master's Program enables the study of leading-edge research and problem-solving capabilities in fields of expertise, through the study of the required subjects "Special Research" and "Special Exercises."
- (2) In "Special Research," the Master's Program provides advice through advisors as well as through academic supervisors, conducts checks of the education and research instruction system for the thesis writing process, and performs checks of educational content, methods, etc. matched to the Course's human resource development objectives.
- (3) The Master's Program has established a "Special Topics in Chemistry" taught by researchers inside and outside of the University, and offers broad opportunities to interact with research activities.
- (4) The Course of Science has established the basic and common subject "Exercises in Advanced Science" to improve technical ability in advanced equipment analysis and structural analysis.
- (5) The Master's Program has established "English for Chemical Literature," under the charge of all academic staff, to improve language ability and develop capabilities to comprehend and write research papers in English.
- (6) The Master's Program encourages to take the subject "Academic English for Science," to improve English conversation and composition ability and to develop English presentation capabilities and English composition capabilities for the experiment portion of theses.
- (7) The Master's Program encourages research presentations at academic meetings in Japan and overseas, to equip students with the capabilities to give presentations and exchange information in English.
- (8) Through TA (Teaching Assistant) positions, the Master's Program offers opportunities for gaining experience that enhances capabilities as an educator.
- (9) The Master's Program effectuates a credits system through strict application of academic

performance evaluations. The Master's Program evaluates capability to resolve the research theme, and evaluates presentation and communication capabilities, through interim presentation of special research and thesis screening, including planning, execution, and presentation, and further through performance of presentations at academic meetings. For the purpose of fairness and strictness, the Master's Program conducts evaluations through three or more expert academic staff.

## **Admissions Policy**

1. The capabilities fostered by a graduate school education

(1) Develops human resources who leverage a broad education and expert knowledge of chemistry to actively undertake the resolution of problems, and who play a central role in fields of fundamental and applied technologies through acquired information processing ability and communication capabilities.

2. Entrants sought by the Field

(1) Persons who possess basic scholarship in fields of expertise in chemistry

(2) Persons who have acquired the fundamentals of the three fields of inorganic/analytical chemistry, organic chemistry, and physical chemistry within the expert subjects of the Faculty of Science Department of Chemistry

(3) Persons who possess a desire to unravel the principles of fields of expertise in chemistry, and to advance fundamental or applied research

(4) Persons who possess the English capability at a level able to understand chemistry textbooks written in English

3. Evaluation of capabilities through university (selection method)

(1) By conducting diverse entrance examinations through a combination of scholarship examinations and oral examinations, the Field of Chemistry accepts students who have acquired the basic scholarship necessary for education at graduate school through study at university, and who possess a strong interest in contributing to society through the learning and application of communication capabilities and expert knowledge of chemistry.

## **Graduate School of Science, Course of Science, Field of Chemistry**

### **Doctoral Program**

#### **Diploma Policy (Policy on the conferring of degrees)**

Persons who have earned the prescribed credits under the curriculum of the Field's Doctoral Program, and whose submitted Doctoral thesis has been screened and accepted, will be judged as having acquired the following capabilities, and will be granted a Doctor's degree (Science).

1. Judgment and practical ability as an independent citizen of sound sense

(1) Have acquired the capabilities to further develop and advance research conducted in the Master's Program

(2) Have acquired the capabilities to broadly comprehend relationships with peripheral fields, also taking the potential significance inherent in research outcomes into account

2. International sensibilities and communication capabilities

(1) Have acquired the capabilities to grasp and present the significance of research outcomes from a broad perspective

(2) Have acquired capabilities for thesis writing and for presentation and exchange of information using English

3. Expert knowledge and skills to address the issues of the age and the demands of society

(1) Have acquired the capabilities to independently pursue research

(2) Have acquired the capabilities to play a central role in various front lines related to chemistry, and to actively and persistently undertake problem resolution and technological development

### **Curriculum Policy (Policy on organization and implementation of curricula)**

In order to develop human resources who can play a central role in education, research, and development in chemistry-related fields, the Field's Doctoral Program has established a curriculum policy under the guidelines shown below.

1. Organization and implementation of curricula

(1) The Doctoral Program seeks to further develop research capabilities through "Special Research," and develops researchers who are able to independently advance research.

(2) The Doctoral Program employs a multiple instruction system under an academic supervisor and three co-supervisors (advisors).

(3) The Doctoral Program divides classroom subjects into synthetic subjects and structural/assessment subjects, to enable comprehension of the relationship with peripheral fields.

2. Educational methods and evaluation

(1) The Doctoral Program conducts thesis writing instruction to equip students with the capabilities to write research papers in English.

(2) The Doctoral Program encourages research presentations at academic meetings in Japan and overseas, to equip students with the capabilities to give presentations and exchange information in English.

(3) Through TA (Teaching Assistant) positions, the Doctoral Program offers opportunities for gaining experience that enhances capabilities as an educator.

(4) The Doctoral Program effectuates a credits system through strict application of academic performance evaluations. The Doctoral Program evaluates capability to resolve the research theme, and evaluates presentation and communication capabilities, through interim presentation of special research and thesis screening, including planning, execution, and presentation, and further through performance of presentations at academic meetings. For the purpose of fairness and strictness, the Doctoral Program conducts evaluations through three or more expert academic staff.

### **Admissions Policy**

1. The capabilities fostered by a graduate school education

(1) Develops human resources who possess a strong desire to put expert knowledge of chemistry to use in education, research, and development, and who aspire to instructional positions in the field of chemistry in the future by resolving problems in the field of chemistry and reporting the results internationally.

2. Entrants sought by the Field

(1) Persons who possess assured scholarship in fields of expertise in chemistry

(2) Persons who possess a desire to uncover and resolve new problems



(3) Persons who possess the English reading comprehension ability at a level able to read academic research papers in fields of expertise written in English, and who possess a desire to acquire English composition ability at a level capable of writing research papers

3. Evaluation of capabilities through Master's program (selection method)

(1) By conducting oral examinations in fields of expertise, the Field of Chemistry accepts students who have acquired the expert knowledge and judgment required for research in the Doctoral Program through education in a Master's program, and who possess a strong interest in playing a central role in chemistry education, research, and development, not only by expanding research but also by communicating the achievements to society.

## **Graduate School of Science, Course of Science, Field of Biological Sciences**

### **Master's Program**

#### **Diploma Policy (Policy on the conferring of degrees)**

Those who have completed the course of the Master's Program of the Field, and whose Master's thesis has been accepted, will be judged as having acquired the following capabilities, and will be granted a Master's degree (Science).

1. Judgment and practical ability as an independent citizen of sound sense

- (1) Have acquired the capabilities to settle by themselves, or to help others to settle, biology-related everyday tasks by applying expertise in biological sciences.
- (2) Have acquired the capabilities to play leading roles in a wide variety of laboratory research and/or development in biological sciences by tackling the issues actively and persistently.

2. International sensibilities and communication capabilities

- (1) Have acquired the capabilities to read and comprehend original research papers, academic literature, and textbooks written in English with accuracy.
- (2) Have acquired the capabilities to write original research papers in English and to evaluate their own research from an international viewpoint.

3. Expert knowledge and skills to address the issues of the age and the demands of society

- (1) Have acquired the capabilities to systematically comprehend expertise in biological sciences, bearing its implications to public interest in mind
- (2) Have acquired the capabilities to plan and execute their own research by applying what they had learned through the Program.

#### **Curriculum Policy (Policy on organization and implementation of curricula)**

The Program organizes curricula under the policies listed below, to develop personnel who have acquired the flexible insight and practical skills required to address problems in various aspects of biological sciences.

1. Organization and implementation of curricula

- (1) The Program offers advanced education in biological sciences at the level ranging from molecules to the global ecosystem, extending the undergraduate curriculum.
- (2) The Program teaches methodology of pursuing original topics and motivates students by

examining first-hand the historically significant original research papers.

## 2. Educational methods and evaluation

- (1) The Program designates two faculty members as advisors to each graduate student in addition to his or her academic supervisor. The laboratory work of the student is directed by the supervisor, whose classes, "Special Exercises" and "Special Research", are mandatory. The curriculum enables the student to solve various problems in the forefront of biological sciences. The diverse characters of the student are carefully distinguished, so that his or her performance is appropriately evaluated.
- (2) The Program offers opportunities to teach undergraduates as Teaching Assistants (TA) to gain experience for their future career as educators or researchers.
- (3) For proper approval of credits, the Program defines methods and criteria for the evaluation of academic performance. The Program evaluates communicative competence and capability to pursue scientific interest, through midterm and final examinations, as well as records of presentations at outside academic meetings. Three or more faculty members per student are named as examinee to ensure unbiased, proper judgment.

## **Admissions Policy**

### 1. The capabilities fostered by a graduate school education

- (1) The Field of Biological Sciences Master's Program develops human resources who have acquired expertise and reasoning ability based on advanced biological sciences, and will play leading roles in biology-related diverse fields in society, such as education, research, and development.

### 2. Entrants sought by the Field

- (1) Those who possess an undergraduate level of biological scholarship
- (2) Those who demonstrate intellectual curiosity and express a strong interest in unraveling the unitary and diverse aspects of living organisms taking various approaches ranging from the molecular to population levels
- (3) Those who possess a good command of English to read biological literature

### 3. Evaluation of capabilities through university (selection method)

- (1) The Program examines on paper in biological sciences and English to check the scholarship of the applicants in the fields. Written examinations may be exempted depending on the undergraduate scores.
- (2) The Program examine every applicant orally to check his or her aptitude for graduate school study and research.

## **Graduate School of Science, Course of Science, Field of Biological Sciences**

### **Doctoral Program**

#### **Diploma Policy (Policy on the conferring of degrees)**

Those who have completed the course of the Doctoral Program of the Field, and whose Doctoral thesis has been accepted, will be judged as having acquired the following capabilities, and will be granted a Doctor's degree (Science).

### 1. Judgment and practical ability as an independent citizen of sound sense

- (1) Have acquired the capabilities to play leading roles in a wide variety of biology-related problems in the modern society by tackling the issues actively and persistently, and by instructing their fellow citizens.
- (2) Have acquired the capabilities to plan and execute by themselves their own research grounded in biological expertise.

### 2. International sensibilities and communication capabilities

- (1) Have acquired the capabilities to express their opinions and discuss at international conferences.
- (2) Have acquired the capabilities to write original research papers in English, and to submit them for publication in expert academic journals.

### 3. Expert knowledge and skills to address the issues of the age and the demands of society

- (1) Have acquired the capabilities to systematically appreciate expertise in biological events, and actively participate in biology-related social problems.
- (2) Have acquired the capabilities to notice biological challenges of the times before others, and to apply their expertise in tackling the problems.

## **Curriculum Policy (Policy on organization and implementation of curricula)**

The Program organizes curricula under the policies listed below, to develop researchers and cutting-edge technicians with flexible insight and practical skills required to address problems in various aspects of biological sciences. Those who completed the course will be globally active and play leading roles in any kinds of basic or applied research in biology forefront.

### 1. Organization and implementation of curricula

- (1) The Program nurtures the ability to read for themselves latest research papers of their field in English, to know the background, significance, and prospects of the research, and to find a key to good original investigations.
- (2) The Program offers discussion classes in comparative study of related, historically significant papers. Participants will discuss the background, significance, and prospects of the papers, gaining insight into the forefront of biological sciences.

### 2. Educational methods and evaluation

- (1) The Program designates two faculty members as advisors to each graduate student in addition to his or her academic supervisor. The laboratory work of the student is directed by the supervisor, whose "Special Research" class is mandatory. The curriculum enables the student to solve problems in the forefront of biological sciences over the course of three years.
- (2) The Program offers opportunities to teach undergraduates as Teaching Assistants (TA) to gain experience for their future career as educators or researchers.
- (3) For proper approval of credits, the Program defines methods and criteria for the evaluation of academic performance. The Program evaluates communicative competence and capability to pursue scientific interest, through midterm and final examinations, as well as records of presentations at outside academic meetings. Three or more faculty members per student are named as examinee to ensure unbiased, proper judgment.

## **Admissions Policy**

### 1. The capabilities fostered by a graduate school education

- (1) The Field of Biological Sciences Doctoral Program develops human resources who have

acquired expertise and reasoning ability with original ideas in advanced biological sciences, and who will assume the leadership in every kind of biology-related field in society, including education, research, and development.

## 2. Entrants sought by the Field

- (1) Those who possess sound scholarship in biological sciences
- (2) Those who demonstrate enthusiasm for unraveling major points at issue in biological events, and who aspire to assume the leadership in the field.
- (3) Those who possess a good command of English to read original research papers, and who are willing to become so competent as to write their own research papers.

## 3. Evaluation of capabilities through Master's program (selection method)

- (1) The Program examines on paper in English to check the scholarship of the applicants.
- (2) The Program examine orally to check their aptitude for Doctoral Program research.