



SOKENDAI Doctoral Programs

AY2024

The Graduate Institute for Advanced Studies, SOKENDAI

Contents

The Graduate Institute for Advanced Studies	1
20 Programs	
Anthropological Studies Program	7
Japanese Studies Program	11
Japanese History Program	15
Japanese Literature Program	19
Japanese Language Sciences Program	23
Informatics Program	27
Statistical Science Program	31
Particle and Nuclear Physics Program	35
Accelerator Science Program	41
Astronomical Science Program	47
Fusion Science Program	53
Space and Astronautical Science Program	57
Molecular Science Program	63
Materials Structure Science program	69
Global Environmental Studies Program	73
Polar Science Program	77
Basic Biology Program	83
Physiological Sciences Program	89
Genetics Program	95
Integrative Evolutionary Science Program	99

Features of the Doctoral Programs

Given the rapid academic progress and social changes in recent years, the doctoral candidates who will lead the next generation are required, more than ever, to acquire specialized knowledge across multiple academic fields, universal literacy and communication skills, and transferable skills that can be used in a variety of situations. Graduate education needs a shift from the conventional educational programs that are vertically aligned and segmented by graduate schools and majors to a “university system centered on degree programs” delivered from the perspective of the learning of degree-seeking students.

In academic year 2023, SOKENDA has restructured its schools and departments and established the Graduate Institute for Advanced Studies, which offers 20 programs. By removing the barriers of the previous graduate schools and departments, SOKENDAI has created a system that allows students to take advantage of the diverse education offered by all of the inter-university research institutions and actively engage in multidisciplinary studies that straddle fields and disciplines and research that crosses the boundaries of institutions. In addition, by taking advantage of small-group education, SOKENDAI aims to nurture the next generation of doctoral students who can take on new challenges and play a leading role in the academic fields and international society through tailor-made education that provides learning opportunities that meet the needs of each student.

Programs

Anthropological Studies

Japanese Studies

Japanese History

Japanese Literature

Japanese Language
Sciences

Informatics

Statistical Science

Particle and Nuclear
Physics

Accelerator Science

Astronomical Science

Fusion Science

Space and Astronautical
Science

Molecular Science

Materials Structure
Science

Global Environmental
Studies

Polar Science

Basic Biology

Physiological Sciences

Genetics

Integrative Evolutionary
Science

Research Institutions



National Museum of Ethnology



International Research Center for Japanese Studies



National Museum of Japanese History



National Institute of Japanese Literature



National Institute for Japanese Language and Linguistics



National Institute of Informatics



The Institute of Statistical Mathematics



Institute of Particle and Nuclear Studies



Accelerator Laboratory / Applied Research Laboratory



National Astronomical Observatory of Japan



National Institute for Fusion Science



Institute of Space and Astronautical Science



Institute for Molecular Science



Institute of Materials Structure Science



Research Institute for Humanity and Nature



National Institute of Polar Research



National Institute for Basic Biology



National Institute for Physiological Sciences



National Institute of Genetics



Research Center for Integrative Evolutionary Science

(1) Level Classification of Courses in the Graduate Institute for Advanced Studies

The Graduate Institute for Advanced Studies offers graduate education in four broad fields: Cultural and Social Sciences, Mathematical and Information Sciences, Physical Sciences, and Life Sciences. Regardless of field, however, all courses are offered as courses of the Graduate Institute for Advanced Studies. All students major in a specific program of their own choosing, but regardless of their program, they can, in principle, take courses necessary for their own studies from among all the courses offered by the Graduate Institute for Advanced Studies.

In practice, many courses are designed primarily for students in a specific program conducting dissertation research. The Graduate Institute for Advanced Studies has classified its courses offered into four levels, each representing the level of expertise and difficulty of the course content, to indicate whether the content is suitable for students in related fields or adjacent areas of specialization. The content and difficulty level of courses at each level are set as shown in Table 1.

Students are encouraged to use this level indicator to determine whether they can/should take a course in light of their own interests, needs, and prior knowledge in their field of specialization.

Table 1 Criteria for setting content and difficulty level

Course level	Criteria
Level1	The content and level of difficulty of the course are designed for introductory students to understand the academic system of the field/specialized area and acquire basic knowledge, assuming that the course is taken by students of the program and of other programs.
Level2	The content and level of difficulty of the course are designed for students of the program or a related/adjacent program to acquire the knowledge they should acquire as a foundation for advancing their studies in the relevant field/specialized area.
Level3	The content and level of difficulty of the course are designed for students of the program to acquire standard knowledge in the relevant field/specialized area.
Level4	The content and level of difficulty of the course are designed for students of the program to acquire highly specialized knowledge necessary to conduct research in specific areas.

(2) Common graduate courses

In addition to courses in the four academic fields offered by each program, common courses among different programs are offered on skills, literacy, and research integrity (i.e., soundness and fairness of research), which are necessary for researchers regardless of their field of specialization.

[SOKENDAI Freshman Course: 2 credits]

This is an intensive course for new students of all programs, taken immediately after their enrollment. New students learn the basic abilities and skills that researchers should acquire and recognize the issues to consider in connection with society through group work. Students are also expected to build connections with others in different fields of specialization.

https://www.soken.ac.jp/en/education/curriculum/freshman_course/

[International Internship: 1 credit]

Through practical research activities overseas, the course aims to improve management and international communication skills for independently conducting research in a research environment with different cultures and customs.

<https://www.soken.ac.jp/en/education/curriculum/iip/>

[Cooperative Education through Research Internship: 1 credit]

This course is designed for students in the third year or later of a five-year doctoral program and for students of a three-year doctoral program. Credits is awarded for participation in and completion of a job-based research internship of two months or more.

(3) Research Guidance

In principle, a professor or associate professor serves as the main supervisor for each student of the Graduate Institute for Advanced Studies. The school adopts a "multiple-supervisor system" in which two or more faculty members are in charge of research guidance, centering on the main supervisor. In addition to such research guidance in each program, SOKENDAI has established an "internal joint advising program" and an "international collaborative program" for students who wish to conduct dissertation research in multiple fields that straddle the boundaries of research institutions or joint research overseas.

[Internal joint advising program]

Amid the recent trend toward the creation of new fields and fusion of different disciplines, the Graduate Institute for Advanced Studies has established an "internal joint advising program," in which research guidance is provided at several research institutions, regardless of the student's program or academic field of specialization, to cultivate interdisciplinary perspectives and foster PhDs who will contribute to the development of a wide range of academic disciplines. The internal joint supervision program is where two faculty members from different research institutions act as main supervisors to provide joint research guidance in response to the needs of students who wish to work on complex and interdisciplinary research projects across the different research institutions.

By independently conducting dissertation research under different research fields, research environments, and research supervision during a certain period of time while in school, students experience firsthand the ideas and methods of different fields in addition to the disciplines and research methods of their academic field. This will

help students develop new fields and solve complex problems in the future. A program is also available to provide financial support for research conducted at geographically distant institutions through internal joint advising program.

[International collaborative program]

The Graduate Institute for Advanced Studies promotes international collaborative degree programs and joint supervising that leverage the rich network of joint research at the research institutions, to provide students with research skills that will enable them to play an active role in the international academic community. A program is also available to financially support research conducted at overseas research institutions through joint supervising.

Program	Program Outline
<p>Double Degree [at least three years]</p>	<p>Students are enrolled as full-time students at SOKENDAI and overseas universities. They engage in academic activities that fulfill the requirements for completion of their respective degrees (the period of time spent at the partner university may be considered as the period of study at the home university). The student submits two different doctoral dissertations for review, one to SOKENDAI and the other to an overseas university, and obtains two degrees.</p>
<p>Dual Degree (“Cotutelle”) [three years, in principle]</p>	<p>Students are enrolled as a full-time student at SOKENDAI and overseas universities, and stay at the partner university for a total of at least one year to receive research guidance (the period of time spent at the partner university may be considered as the period of study at the home university). A doctoral dissertation is jointly reviewed by both universities to obtain a single degree (two diplomas).</p>
<p>Joint Supervision [three years]</p>	<p>Students stay at an overseas university for a total of at least one year under the guidance of a research supervisor, and receive guidance on their dissertation research. Students submit one doctoral dissertation to their home university and receive a degree from their home university.</p>

(4) Overseas Educations and Research Grant

In addition to the regular research activities in the program, the Graduate Institute for Advanced Studies offers various educational and research support programs, such as the SOKENDAI Student Dispatch Program¹⁾ and SOKENDAI Special Researcher.²⁾ The SOKENDAI Student Dispatch Program supports students’ independent research activities overseas, as well as long-term research activities in Japan and overseas, that will lead to future career development. The SOKENDAI Special Researcher provides research grants to future leaders in basic research and academic research and to those who take

the initiative in conducting original and challenging research. For details, please refer to the website.

- 1) https://www.soken.ac.jp/en/education/dispatch/sokendai_studentdispatchprogram/
- 2) https://www.soken.ac.jp/en/campuslife/tuition/sp_researcher/
https://www.soken.ac.jp/en/campuslife/tuition/sp_researcher_ch/

Anthropological Studies Program

Program Outline

The Anthropological Studies Program is offered by National Museum of Ethnology. Students will conduct research on the diverse cultures of humankind in various parts of the world from prehistoric times to the present. From the perspective of cultural anthropology, ethnology, and related fields, student will be instructed in ethnographic research that describes and analyzes specific cultures and in cross-cultural research that compares cultures from specific perspectives. The goal is for students to complete their dissertation by utilizing data obtained through field research as well as specimens, audio-visual materials, and literature of the National Museum of Ethnology.

This program consists only of a three-year doctoral program for students who have obtained a master's degree or those who are recognized as having equivalent to master's degree or higher academic ability. Students will study at the National Museum of Ethnology, located in Suita City, Osaka.

Aims for Doctoral Candidates

This program aims to nurture PhDs who can acquire the knowledge and methodologies accumulated in the academic fields of cultural anthropology, ethnology, and related fields, and then apply them to promote advanced research.

- A person who can deeply understand phenomenon through field research and material analysis, and who can independently create new and original intellectual values based on free thinking
- A person with a wealth of insight who can contribute to broad academic advancements based on their own expertise and with an interest in issues in related fields from a multidisciplinary and integrated perspective
- A person who respects differences and minorities in terms of country, region, language, culture, gender, religion, and other aspects, and who is able to internationally disseminate academic results with a high degree of universality based on dialogue and collaboration
- A person who recognizes the social significance and positioning of the academic research being conducted and who can act autonomously with a sense of ethics and responsibility as a researcher

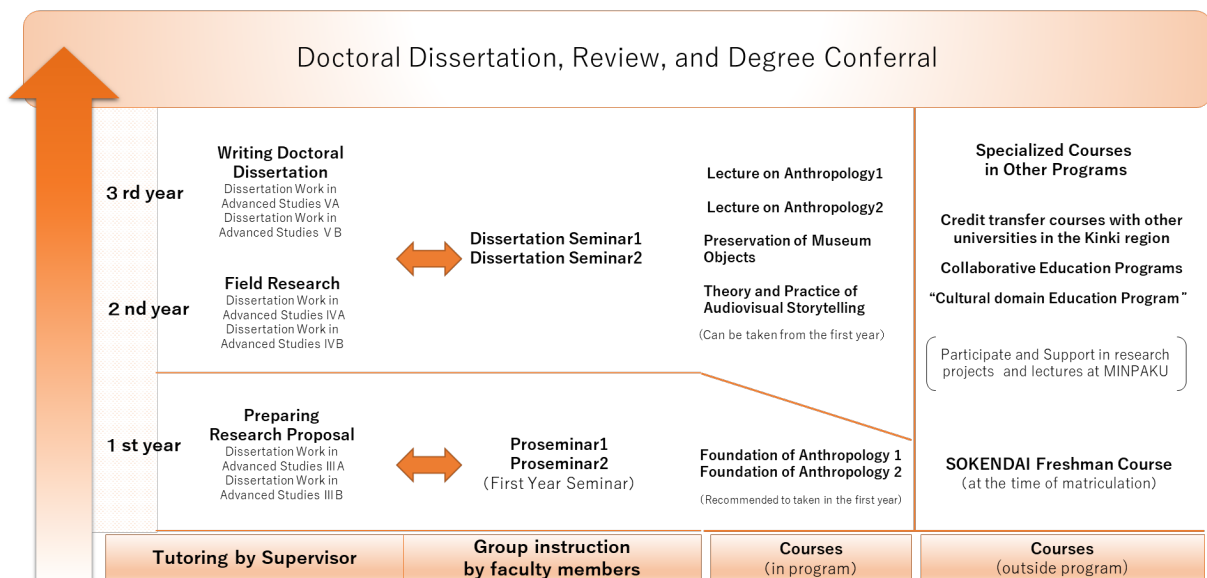
Learning and Research Activities

Students in this program will deepen their understanding of their own research topics and acquire the ability to promote advanced research by taking advantage of lectures on knowledge and methodologies accumulated in their specialized fields, exercises for

discussions related to their research topics, and guidance in writing theses that meet the needs of individual students.

1. Students will take the following three series in the first-year seminar (Proseminar 1 and 2). Immediately after admission, students present their previous individual research and doctoral research plans in the Research Plan Series. Students will take part in a theme series, in which each faculty member takes turns giving a lecture on a specialized field and facilitating discussions based on the lectures to help students acquire a broad range of knowledge. After completing one year of learning and research, students will develop their own doctoral research plans and present them in the Research Proposal Series.
2. To acquire basic knowledge and methodologies in cultural anthropology, ethnology, and related fields, students will select and take common courses (Foundation of Anthropology 1 and 2).
3. Students will conduct field research using various grants, the student dispatch service of the program, and the SOKENDAI Student Dispatch Program.
4. Students will make several presentations of their submitted papers and a part of their doctoral dissertations in Dissertation Seminar 1 and 2. In these seminars, students will receive criticism and advice from their peers, to hone their skills in discussion, commentary, and organization of arguments, and to acquire the multifaceted and multidisciplinary perspectives necessary for advancing their research.
5. Students will present several submitted papers that constitute chapters of their doctoral dissertation with the guidance of their supervisor (Dissertation Work in Advanced Studies IIIA–VB) and discussions in the dissertation seminar. Finally, students will prepare a doctoral dissertation.

Curriculum Model of Anthropological Studies Program



Obtaining a Degree

The doctoral degree is awarded to those who have fulfilled the requirements for graduation of Anthropological Studies Program: acquired basic knowledge and education in cultural anthropology, ethnology, and related fields; acquired competence as an independent researcher; and passed doctoral dissertation examinations. The doctoral dissertation that has passed the preliminary examination will be submitted for the final examination. The dissertation will be examined through a public presentation followed by an oral examination by examiners. Upon passing this examination and obtaining the approval of the Representative Committee of Cultural and Social Studies, the student is awarded the degree of Doctor of Philosophy (Japanese : *Bungaku* 文学 or *Gakujutsuu* 学術).

For Prospective Students

Type of Students We Seek

The program seeks students who have a strong interest in cultural anthropology, ethnology, and related fields, with the will to be active internationally. The program is ideal for students with language ability, communication skills, and the motivation to constantly hone their intellect and sensitivity to conduct research that will open up a new era, while gaining a bird's-eye view of global trends, human activities, and the current academic discipline that seeks to capture them.

Selection of Students for Admission

In selecting students for admission, we place importance on conceptual ability, basic academic ability, expressive ability, and logical thinking ability to actively promote research in cultural anthropology, ethnology, and related fields in the National Museum of Ethnology. To properly judge such abilities, we will select applicants by screening their application documents, examining their master's thesis, reviewing their published papers (if any), and interviewing them.

Japanese Studies Program

Program Outline

This program provides education and research on Japanese culture from a global perspective, to promote international and interdisciplinary Japanese studies across the humanities, social sciences, and natural sciences. The goal is to foster researchers in Japan and abroad who will lead the next generation of global Japanese studies. The program will cultivate an interdisciplinary spirit that deals with cross-cutting issues, multifaceted perspectives, a wide range of interdisciplinarity, and a high level of international reach and originality.

The program offers only a three-year doctoral program for students who have obtained a master's degree. Doctoral candidates who belong to this program will study and conduct research at the International Research Center for Japanese Studies, located in Kyoto, Kyoto Prefecture.

Aims for Doctoral Candidates

The program aims to nurture researchers to be aware of the significance and position of Japan in human civilization and the world order. They will examine the cultural phenomena that have taken place spatio-temporally in Japan from multifaceted and new perspectives. They must be able to widely contribute their achievements to the next generations in both Japanese and international societies.

- Our candidates possess a comprehensive way of thinking about Japanese culture and society, with an eye on international comparisons and linkages, and can lead world-class research.
- Our candidates have a deep academic knowledge across the humanities and social sciences, are able to grasp and absorb specialized knowledge shared within the academic community, and then present free ideas and perspectives that transcends conventional ways of thinking, providing new knowledge that can contribute to the academic community.
- Our candidates are aware of their social responsibility as researchers, are deeply interested in the wide range of cultural and social issues surrounding Japanese society, and can present a clear vision that integrates specialized knowledge to solve them.
- Our candidates consistently uphold the research ethics and advanced social mission of the humanities and social sciences, strive to acquire broad knowledge of and education in the humanities and social sciences in general, and disseminate their research results broadly and internationally.

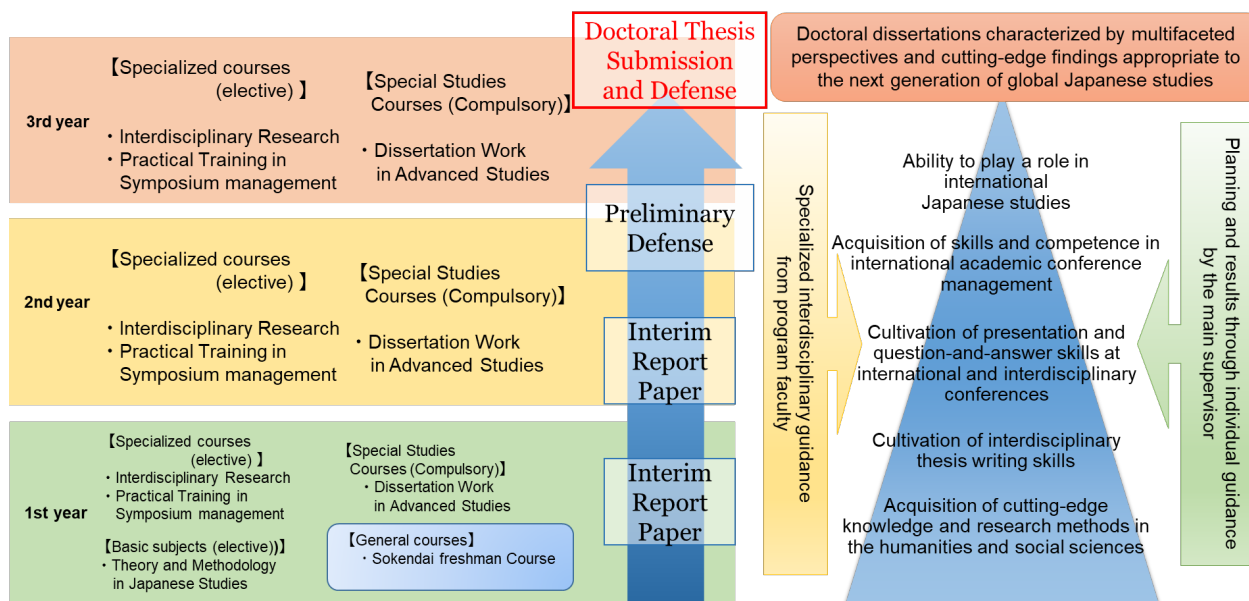
Learning and Research Activities

Candidates in this program are expected to have acquired the necessary grounding to operate independently and be able to plan and devote themselves to research activities.

After enrollment, students will develop the research ethics and communication skills essential for researchers and professionals through the "SOKENDAI freshman course" and other courses. They will also begin the research that will culminate in their doctoral thesis, written under the guidance of one main supervisor and two sub-supervisors in the multi-supervisor system. Through lectures, exercises, and practical guidance by faculty members with diverse expertise, students will acquire an international and interdisciplinary perspective not limited to their own field of study, and develop the ability to deliver presentations and answer questions at academic conferences and other venues. Students will also conduct comprehensive research that spans specialized fields and related areas, in line with their own field of specialization, to complete their doctoral dissertation.

- Theory and Methodology in Japanese Studies (lecture): This lecture course is given by faculty members of various specialties and nationalities. Through it, students will acquire cutting-edge knowledge and methods in various fields of the humanities and social sciences. This is a compulsory course.
- Interdisciplinary Research (workshop): This course provides an opportunity for students to prepare interim reports on their research by presenting their research results in front of faculty members from various fields, including their primary supervisor, and to receive feedback on their progress, which helps students write interdisciplinary papers. In addition to cultivating skills, students will acquire the ability to deliver oral presentations and answer questions at international and interdisciplinary academic conferences. This is a compulsory course.
- Dissertation Work in Advanced Studies (dissertation writing guidance): Students receive regular guidance from their primary supervisor on the progress of their research, as well as from other faculty members as needed, to deepen their interdisciplinary knowledge and complete their doctoral dissertation. This is a compulsory course.
- Practical Training in Symposium Management (practical training): Students will participate in symposiums, seminars, joint research meetings, lectures, and other events held by the International Research Center for Japanese Studies (IRCJSJ), the parent institute of this program, to develop the skills and abilities necessary to organize and manage international academic conferences in the future. In addition, through active participation in discussions at these symposiums, students will participate in the international community of researchers and build their own interdisciplinary networks.
- In addition to the courses offered in this program, students can take courses in 19 other programs to expand their knowledge and research methods.

Japanese Studies Program



Obtaining a Degree

To obtain a doctoral degree, students must earn the required number of credits and defend their doctoral dissertation.

To defend their doctoral dissertation, students must meet all of the following requirements:

- (1) Students must be enrolled in this program for at least three years (one year for those who have outstanding research achievements) prior to completion.
- (2) Students must have earned or be expected to earn the prescribed number of credits within the prescribed application period.
- (3) Students must have received the required supervision.
- (4) Students must have passed the preliminary examination.

Doctoral dissertations are examined within Cultural and Social Studies field. Each dissertation will be reviewed by two external examiners, who are experts from other institutions. In addition to this review of the doctoral dissertation, students must attend a public defense of the dissertation, in which they present their thesis and answer questions. Following a successful defense and approval by the Cultural and Social Studies faculty, students will be granted the title of Doctor of Philosophy.

For Prospective Students

Type of Students We Seek

The Graduate University for Advanced Studies (SOKENDAI) seeks students of any nationality or cultural background who are interested in Japanese studies and motivated to pursue interdisciplinary research from a broad perspective. Accepted students are expected to draw on the diverse knowledge and methodologies of the Japanese Studies Program faculty, and to independently and critically undertake interdisciplinary Japanese studies research, thereby contributing to the internationalization of Japanese studies. Admissions are open for the three-year doctoral program. Applicants are required to hold a master's degree.

Selection of Students for Admission

SOKENDAI screens the submitted documents and interviews potential candidates. Along with an assessment of an applicant's academic abilities and capacity to conduct independent research, candidates are evaluated on the theoretical and empirical originality of their master's thesis and any other scholarly papers submitted; originality, feasibility, and academic potential of the research the applicant seeks to pursue; and candidate's presentation skills, communication skills, and overall future potential to contribute to the field.

Japanese History Program

Program Outline

This program aims to nurture researchers who can conduct advanced and cutting-edge research in the Japanese history field in the broad sense of the term, with a specialized, international, and interdisciplinary perspective, and who can contribute to society through their advanced research skills and expertise.

This program consists of a three-year doctoral program for students who have obtained a master's degree. Students in this program will study and conduct research activities at the National Museum of Japanese History, located in Sakura City, Chiba Prefecture. With full use of the museum's vast collection and state-of-the-art analytical techniques, the student's doctoral dissertation will have fruition in the highest level of material-based research.

Aims for Doctoral Candidates

1. Students with the ability to conduct advanced research in the field of Japanese history, based on sources, in the broadest sense, and to contribute to academic development.
2. Students contributing to society with high ethical standards and responsibility, based on broad perspective and the ability to make logical judgments, while taking needs into consideration.
3. Students who are able to disseminate high-standard research results domestically and internationally based on the knowledge acquired and lead original research.

Learning and Research Activities

This Japanese History Program offers three types of classes: Individual Lessons, Basic Exercises, and Thesis Guidance.

In Individual Lessons, students will deepen their knowledge in their specialty and related fields through lectures, dialogues and discussions in line with their respective specialties. Lessons unique to museums, such as the use of actual materials, are possible.

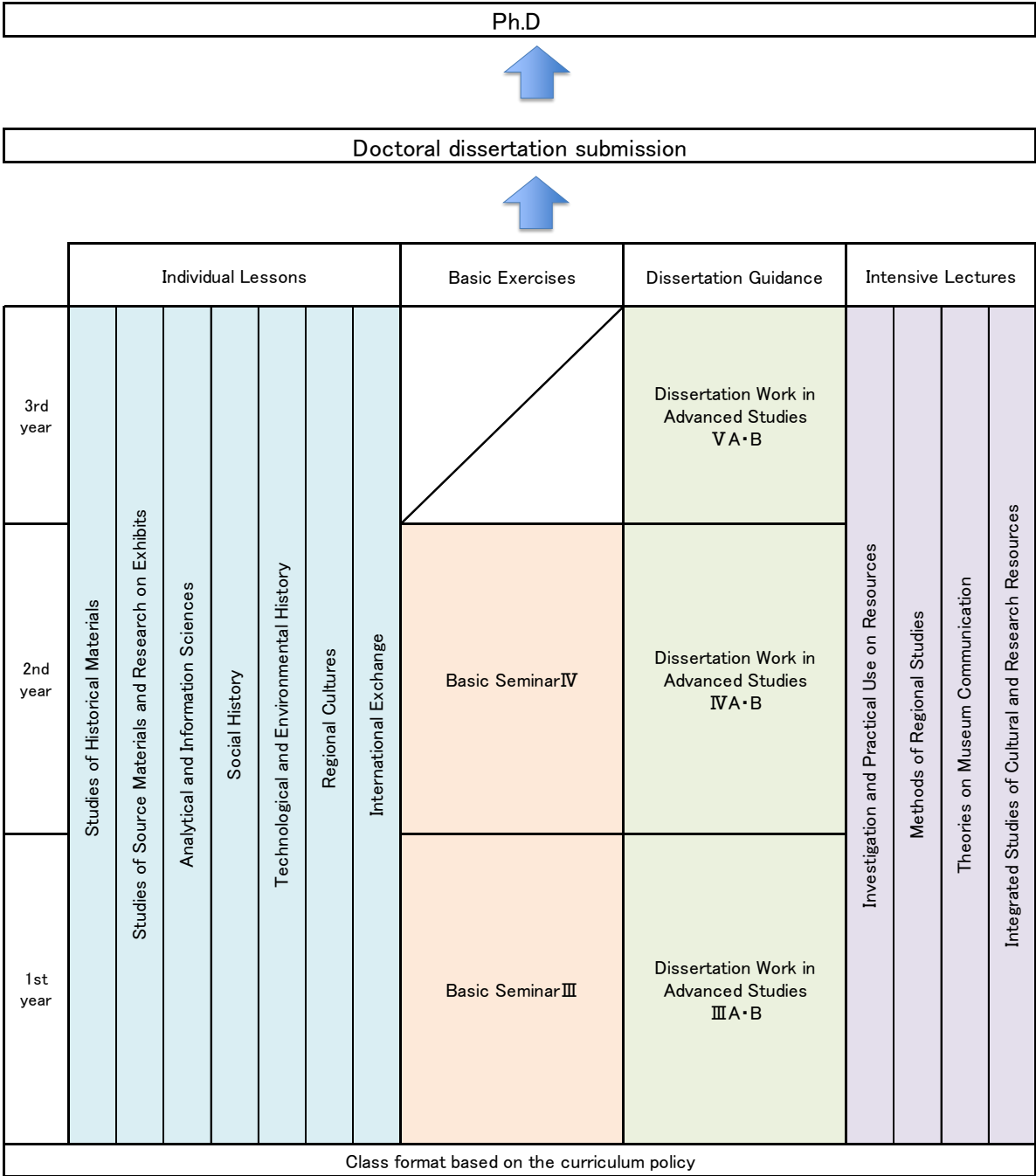
In Basic Exercises, all program faculty and students participate in presentations and discussions. Dialogue across specialties broadens the student's research horizons and improves their communication skills.

In the Dissertation Guidance, students work mainly with their supervisors to practice knowledge and skills for preparing their doctoral dissertation. This class type includes lectures, exercises, and practical training.

In addition to these three forms of classes, various Intensive Courses are offered to cultivate ethics and interdisciplinarity.

To obtain a doctoral degree, students must earn the abovementioned course credits according to the curriculum and complete a doctoral dissertation.

Course Model of Japanese History Program



Obtaining a Degree

In this program, students must be enrolled for the required period and obtain the mandatory credits, receive the research guidance, and complete the program of study. Students must also pass the doctoral dissertations within the specified period.

Completion of the program is judged based on whether the student has acquired the comprehensive abilities necessary to work independently as a researcher of Japanese history in the broad sense of the term, as well as the specialized and interdisciplinary knowledge that forms the basis of this program. The doctoral dissertation examination starts with a preliminary examination approximately six months prior to the submission of the final examination. After it is approved, the final examination will be conducted. The doctoral dissertation is reviewed from a specialized and broad perspective by academic supervisors and researchers outside the university, with a public presentation and an oral or written examination. Upon passing this examination, the student is awarded the degree of Doctor of Philosophy (Japanese: *Bungaku* 文学). Degree conferral and graduation are held twice a year (September and March).

For Prospective Students

Type of Students We Seek

This program seeks students who have a strong interest in Japanese history in the broadest sense and adjacent fields, and are motivated to grow as independent researchers through independent and sustained research activities.

We expect applicants to have already published a master's thesis or equivalent academic paper and to have a clear theme on which to base their research in Japanese history in the broad sense of the term and in adjacent fields. We also hope the applicants have a solid foundation of basic skills and methods to complete a doctoral dissertation on their themes. If you are motivated to pursue a doctoral degree, we will provide maximum support through our well-trained staff, materials, equipment, and financial assistance.

Selection of Students for Admission

The first screening of the evaluation focuses on submitted research achievements (mainly master's thesis). The master's thesis is evaluated for its formality, originality, development, logic, and substantiation. In addition, the research content that the applicant wishes to pursue is also evaluated for its originality and planning.

The second screening is primarily an oral examination. The screening evaluates the content, knowledge, motivation, and planning from the perspective of whether the applicant can complete a doctoral dissertation. In addition, the applicant's qualities and potential as a researcher, as well as diverse communication skills, are also evaluated.

Japanese Literature Program

Program Outline

This program, with the National Institute of Japanese Literature as its parent institute, fosters students to become leaders in the new development of Japanese literature. Specifically, this program aims to enable students to acquire specialized research techniques and comprehensive analytical skills and knowledge by focusing on primary sources as research subjects, mainly literature, among cultural resources. The program fosters logical thinking and writing skills, creative and interdisciplinary perspectives, as well as the ability to tackle issues in peripheral fields, to nurture researchers with a broad perspective who can tackle issues in surrounding fields and play an active role both domestically and internationally.

This program consists of only the doctoral program, and students in this program will study and conduct research activities at the National Institute of Japanese Literature, National Institutes for the Humanities, located in Tachikawa City, Tokyo.

Aims for Doctoral Candidates

This program aims to nurture the following doctoral students.

- A person who has in-depth knowledge and advanced research skills in primary sources, including peripheral areas, and is able to promote research in the study of Japanese literature with comprehensive analytical skills.
- A person who has the ability to think logically and express oneself in writing, and to tackle issues in peripheral fields and present new perspectives on research through original ideas.
- A person who can acquire knowledge from a broad perspective, and contribute to the advancement of science, in collaboration with researchers in Japan and abroad, without being limited to their own specialty or country/region.

Learning and Research Activities

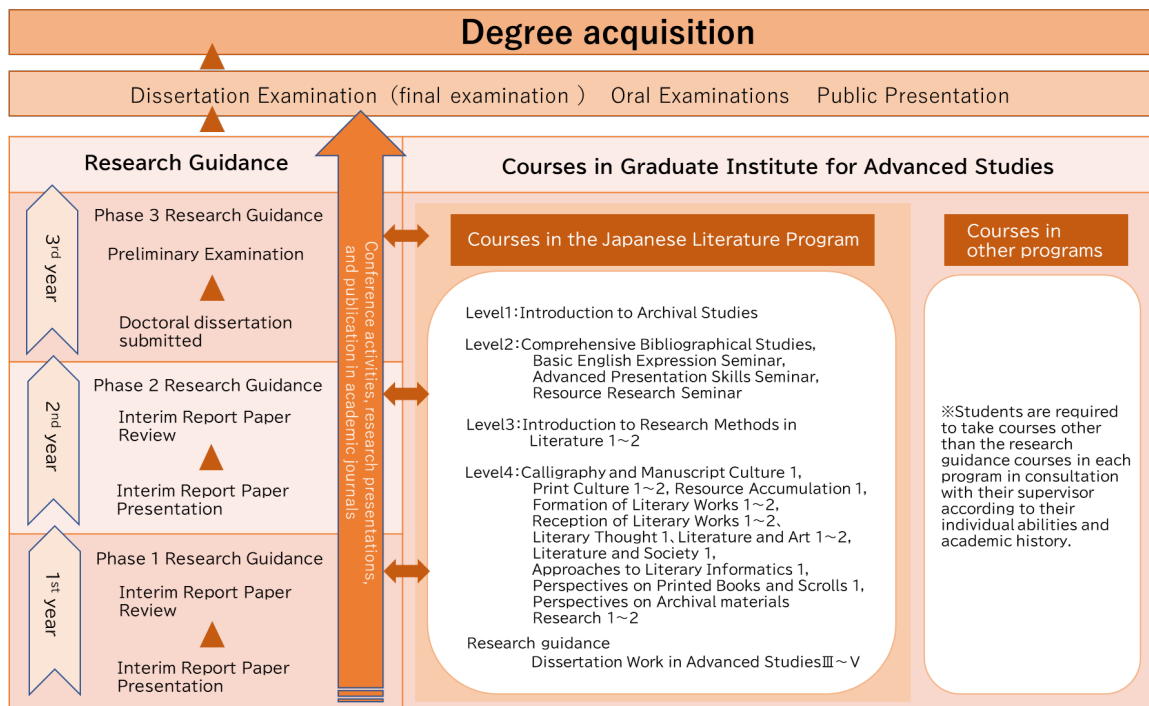
Students in this program will engage in the following academic and research activities to acquire the competencies required for the doctoral degree.

Through lectures and exercises that comprehensively analyze the characteristics of Japanese literature from the perspectives of cultural resource theory, formation and enjoyment theory, ideology and art theory, information theory, among others, students will develop advanced expertise and research skills.

Under a multiple-supervisor system in which each student is assigned a main supervisor and two sub-supervisors, students are guided in their dissertations in accordance with their individual characteristics, thereby acquiring the ethical standards of a researcher and steadily advance in the writing of their doctoral dissertations.

- Introduction to Research Methods in Literature is a lecture series given by all faculty members in this program. Students will learn various analytical methods and cutting-edge findings in the study of Japanese literature.
- In Dissertation Work in Advanced Studies, students are guided by supervisors toward the completion of their doctoral dissertation. The class also includes guidance on the presentation of interim thesis research and conference presentations, etc., prior to the submission of the preliminary review thesis. Student must complete this course.
- Comprehensive Bibliographical Studies explores various approaches to enriching the humanities through the use of diverse Japanese writings, as well as collaboration among multiple disciplines, such as philology, bibliography, linguistics, history, and iconography.
- Basic English Expression Seminar and Advanced Presentation Skills Seminar are practical courses. Students learn English expression and universal design for creating presentation materials. They acquire communicative techniques for accurately and effectively communicating their research content and results at academic conferences in Japan and abroad. These courses are designed to deepen students' understanding of intellectual property rights and to meet the demands of professionalism, interdisciplinarity, and immediacy with a view to contemporary society.

○ Curriculum Model of Japanese Literature



Obtaining a Degree

To obtain a doctoral degree, students must pass a doctoral dissertation examination. To be considered for the doctoral dissertation examination, students must go through the prescribed research instruction stage, receive doctoral dissertation guidance, and then submit an application for the examination.

Research guidance is conducted in two stages, and students will proceed to the doctoral dissertation guidance after the examination of the interim report thesis at each stage. After receiving sufficient doctoral dissertation guidance, students undergo a doctoral dissertation examination, and if they pass, they are awarded a doctoral degree.

For Prospective Students

Type of Students We Seek

We seek students who have the following qualities:

1. A person who has a high level of interest and motivation in the study of Japanese literature and related fields.
2. A person who is willing to conduct research while utilizing cultural resources and to acquire specialized research and comprehensive analytical skills, knowledge, and techniques.
3. A person who has logical thinking ability and written expression skills.
4. A person who aims for new research and has an original perspective.
5. A person who has the will and enthusiasm to disseminate research results to an international and interdisciplinary audience.

Selection of Students for Admission

In selecting students for admission, we place importance on the basic research ability to promote empirical, logical, and independent research in the academic fields in which the National Institute of Japanese Literature (NIJL) is involved. The aptitude of the applicant will be judged through their master's thesis and oral examination (regarding the content of the thesis, specialized knowledge, research plan, etc.).

Japanese Language Sciences Program

Program Outline

The Japanese Language Sciences program aims to foster the future generation of researchers who can analyze the Japanese language objectively and quantitatively based on data, utilizing the linguistic resources and research network accumulated by the National Institute for Japanese Language and Linguistics. The program will cultivate the ability and skills of students to conduct linguistic analysis using new methods, such as theoretical investigations, experiments, fieldwork, social surveys, and computer simulations, in addition to conventional analytical methods.

This program is a three-year doctoral program for students who have obtained a master's degree. Students in this program will study and conduct research activities at the National Institute for Japanese Language and Linguistics, located in Tachikawa City, Tokyo.

Aims for Doctoral Candidates

This program aims to educate the following doctorates.

- a) Researchers who can objectively and quantitatively analyze the Japanese language based on data in the research fields of general linguistics, Japanese linguistics, Japanese language education, and natural language processing; researchers who can conduct linguistic analysis using not only conventional analytical methods but also innovative methods; researchers who act with a sense of ethics and responsibility as researchers and contribute to the development of a wide range of academic fields from interdisciplinary perspectives.
- b) Those who can contribute to society in the following ways by utilizing the knowledge obtained through their research.
 - i. Data scientists and natural language processing engineers working in the information processing industry
 - ii. Curators, archivists, and local government officials with linguistic expertise
 - iii. Educators who teach Japanese language education in Japan and abroad
 - iv. Developers of digital teaching materials related to the Japanese language

Learning and Research Activities

Students in this program will conduct the following academic and research activities to acquire the competencies required for the doctoral degree.

In the first year, students learn the Japanese language sciences in a well-balanced manner through Foundations of Linguistic Research IIIA and IIIB (comprehensive course;

omnibus format) in the lecture courses attended by all students. Concurrently, students take field-specific lecture and seminar courses (first and second semester, respectively) according to their interests to deepen their understanding of their specialized fields. Students will report on their research plans at Seminar in Linguistic Research III (research seminars), in which all students participate, and will also receive individual guidance from the faculty member in charge of Dissertation Work in Advanced Studies III (thesis guidance) to clarify their own research plans.

In the second year, students continue to conduct research toward writing their doctoral thesis under the individual guidance of their supervisors in Dissertation Work in Advanced Studies IV, and report on their progress in Language Research Seminar IV (a subject in which all students participate). In addition, students develop the ability to present papers in English through Practices in Academic Communication in English.

In the third year, students take Dissertation Work in Advanced Studies V (thesis guidance subject) to write their doctoral thesis.

Students may also take classes in other programs offered by the Graduate Institute for Advanced Studies.

Courses for cultivating research ethics include Foundations of Linguistic Research IIIA, Foundations of Linguistic Research IIIB, and Seminar in Field Linguistics. Those for cultivating global competence include Theoretical and Contrastive Linguistics and Practices in Academic Communication in English.

The submission of the doctoral dissertation proceeds as follows.

- Upon admission, students begin their doctoral dissertation research under the multi-supervisor system consisting of a main supervisor and two sub-supervisors.
- May of the first year: Students present their research plan as an assignment for Seminar in Linguistic Research III.
- October–November of the second year: Interim presentations will be delivered as an assignment for Seminar in Linguistic Research IV.
- June–July of the third year: Students undergo a preliminary examination of their doctoral dissertation.
- December–January of the third year: Students undergo a final examination of their doctoral dissertation.

Curriculum Model of the Japanese Language Sciences Program

year	Semester	Lecture courses		Seminar courses			
		Comprehensive	Field-specific	Research seminars	Field-specific	Thesis Guidance	others
3rd year	2nd semester					Dissertation Work in Advanced Studies V※	
	1st semester						
2nd year	2nd semester			Seminar in Linguistic Research IV※		Dissertation Work in Advanced Studies IV※	Practices in Academic Communication in English
	1st semester						
1st year	2nd semester	Foundations of Linguistic Research III B ※	Lectures (elective)	Seminar in Linguistic Research III ※	Seminars (elective)	Dissertation Work in Advanced Studies III ※	
	1st semester	Foundations of Linguistic Research III A ※					

Subjects marked with ※ must be taken.

Obtaining a Degree

To obtain a doctoral degree, students must earn the prescribed credits and pass a preliminary examination. In addition, the student's academic paper(s) must be published in an academic journal or other academic publication.

The doctoral dissertation is first examined by the review committee within the program. The examination includes a public oral presentation and an oral examination. After passing this examination and upon the approval of the Representative Committee of Cultural and Social Studies field or that of Mathematical and Information Science field, which conducts the final examination, the student is awarded the degree of Doctor of Philosophy (Japanese: *Bungaku hakase* or *Gakujutsu hakase*).

For Prospective Students

Type of Students We Seek

- Students who have a strong interest in language research, who are intellectually committed to exploring new research areas while taking a bird's-eye view of related fields, and who have the will and enthusiasm to play an active role on the international stage.
- Students who are particularly interested in evidence-based research, theoretical, experimental, and applied work utilizing evidence and collaboration with data science.

Selection of Students for Admission

Applicants will go through two rounds of selection: the first screening based on application documents, such as the description of the proposed research and the master's theses, and second, on an interview.

The description of the proposed research will be evaluated in terms of the appropriateness and concreteness of the plan and its academic significance.

For master's theses and other papers that have been published, the evaluation will be based on the following criteria: logic, originality, potential for further development, empirical basis, understanding of previous literature, and thesis format.

In the interview, students are evaluated on their research motivation, discussion skills, and language skills.

Informatics Program

Program Outline

The informatics program aims to nurture researchers who will make new, cutting-edge contributions to the field of informatics, an interdisciplinary field that crosses a wide range of disciplines from information science and information engineering to humanities and social informatics, for the further development of the information society.

This program has a five-year doctoral program for bachelor's degree holders and a three-year doctoral program for master's degree holders. Students enrolled in this program conduct academic and research activities at the National Institute of Informatics, located in Chiyoda-ku, Tokyo.

Aims for Doctoral Candidates

In this program, the doctoral degree is awarded to students who are recognized as independent researchers in the interdisciplinary field of informatics. An independent researcher is one who can independently carry out the entire process of setting important issues in their field and planning and executing their solutions; identify, acquire, and apply knowledge and skills needed to solve the issues; and make new, cutting-edge contributions to the field.

Learning and Research Activities

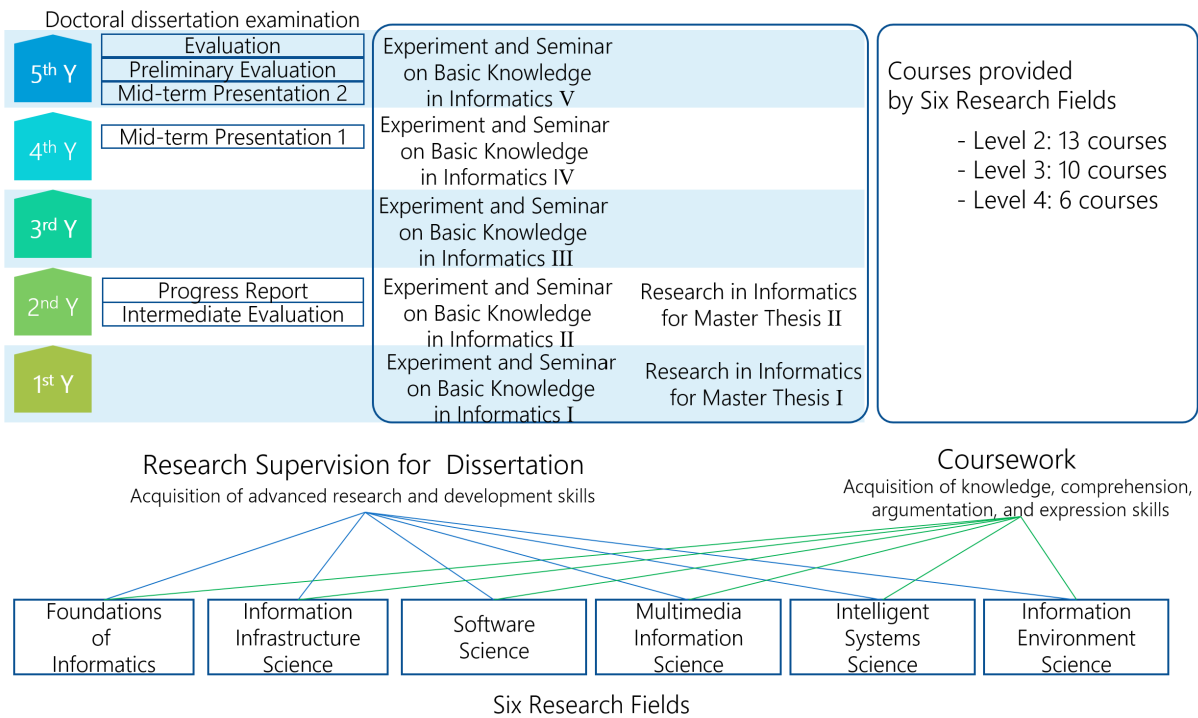
Given that informatics is an interdisciplinary field, this program organizes six research fields for research and coursework guidance: Foundations of Informatics, Information Infrastructure Science, Software Science, Multimedia Information Science, Intelligent Systems Science, and Information Environment Science.

The curriculum consists of two major components: research and coursework guidance. Under research guidance, students acquire advanced research and development skills through research practice. Under coursework guidance, students acquire basic academic ability, knowledge and skills, including communication and presentation skills.

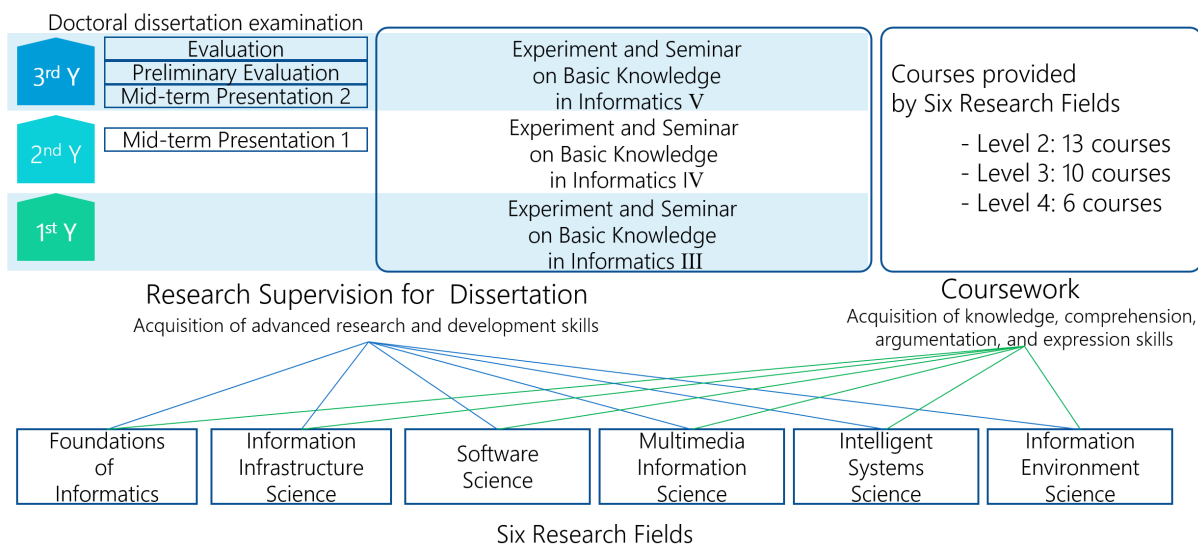
Under research guidance, students acquire research and development skills through the practice of highly specialized research under the guidance of an advisory group consisting of three faculty members. Finally, students plan and execute cutting-edge research and prepare their doctoral dissertation. Students are strongly encouraged to present the results of their research at international conferences. Moreover, students receive extensive advice from multiple faculty members through two interim presentations on the content and progress of their research, thereby strengthening their awareness of issues as researchers and ability to think objectively. In the five-year doctoral program, a debriefing session is held at the end of the second year to confirm that students have acquired sufficient research skills and academic ability to conduct research for their doctoral dissertation.

The subjects are divided into ones for research guidance and ones for coursework guidance. Taking advantage of the small number of students per faculty member, the program can provide tailor-made education for each student. Students can also choose subjects according to the specialization they are aiming for and the knowledge and skills required under the guidance of the advisory group. Credits are awarded based on absolute evaluation of achievement through examinations, reports, and other means, and in light of subject-specific standards.

Curriculum Model of Informatics (Five-year doctoral program)



Curriculum Model of Informatics (Three-year doctoral program)



Obtaining a Degree

To obtain a doctoral degree, students must pass a preliminary and final doctoral dissertation examination by a review committee consisting of at least five faculty members and others. To pass these examinations, students must have at least one first-authored paper accepted in the equivalent of a journals or at a top-level international conference as defined by this program. Doctoral dissertation examinations are mainly reviewed in the area of Mathematical Information Science, but students may choose to have their dissertations reviewed in other fields depending on their research expertise.

In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students We Seek

For the further development of the information society, we seek students or working professionals who have a strong interest in informatics, an interdisciplinary field that crosses a wide range of disciplines from science and engineering to humanities and sociology, and who aim to become active independent researchers in the field of informatics.

Selection of Students for Admission

- 1) The selection of applicants is based on whether they have the ability to become independent researchers who will be active in the interdisciplinary field of informatics by acquiring the skills through our research and coursework guidance after enrollment. The criteria are as follows:
 - Basic academic ability, knowledge, and skills within and outside of information science, information engineering, and humanities and social informatics sufficient to carry out the research
 - Ability to identify important issues and plan and execute solutions independently
 - Have an interest in the research field and willingness to conduct research
 - Have communication and presentation skills, including language skills
- 2) Faculty members in the research field of the applicant's choice will examine the application documents and conduct an interview (online interview is acceptable for those residing outside Japan). Subsequently, the entire faculty in charge of this program will evaluate the application and make a comprehensive judgment as to whether the student is suitable for this program, with reference to 1) above.

Statistical Science Program

Program Outline

To realize the extraction of information and knowledge from real-world data, this program conducts education and research related to data collection design, modeling, inference and prediction, as well as their fundamentals in mathematics and practical application. The program aims to develop researchers who are equipped with creative research skills that contribute to solving various intricately intertwined important issues.

This program consists of two programs: a five-year doctoral program for bachelor's degree students and a three-year doctoral program for master's degree students. Students enrolled in this program will conduct academic and research activities at the Institute of Statistical Mathematics, located in Tachikawa city, Tokyo.

Aims for Doctoral Candidates

Our goal is for doctoral students to acquire the ability to make sound logical judgments based on a broad knowledge of statistical science, solve unresolved and important theoretical and applied problems in statistical science, contribute to the development and deepening of statistical science at a world-class level, and disseminate their research results. Based on a broad perspective and high communication skills, students will work on issues in related academic disciplines from an interdisciplinary perspective, contribute to the advancement of a wide range of disciplines, understand the needs of society, and contribute to the development of society in an ethical and responsible manner.

Learning and Research Activities

The program aims to provide students with a broad range of advanced expertise in statistical science under the guidance of multiple faculty members with diverse expertise. Students systematically learn and deepen their statistical knowledge through several basic and specialized courses according to their disciplines. Each basic course (Probability and Stochastic Processes, Mathematical Statistics, Multivariate Analysis, Time Series and Spatial Modeling, Statistical Machine Learning, Computational Inference and Computational Mathematics) is aimed to provide basic knowledge in different aspects of statistical science.

In the Statistical Mathematics Seminar, students are exposed to cutting-edge topics in statistical science by the program faculty. In the Statistical Science Study, students gain experience in presenting the results of their own studies and research. The Institute of Statistical Mathematics holds open lectures and various research meetings throughout the year, and students can participate in them to deepen their knowledge.

At the student research presentations held twice a year, students deliver oral and poster presentations, and can also discuss and obtain advice from program faculty and

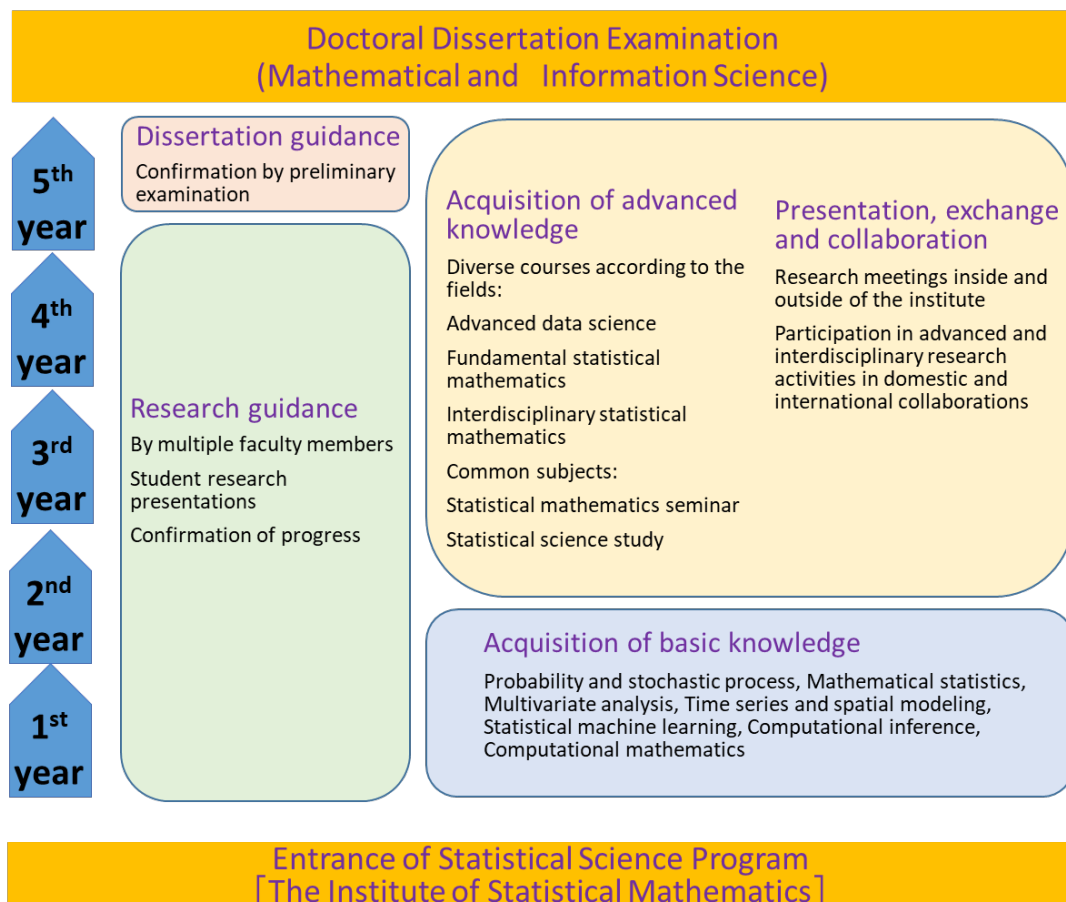
outside researchers. Students also participate in research meetings outside the institute to further their studies.

The Institute of Statistical Mathematics conducts a variety of cutting-edge, interdisciplinary research activities in collaboration with universities and research institutions in Japan and abroad, providing students with opportunities for collaboration and exchange. Through participation in these activities, students can gain a broad perspective and a high level of communication skills.

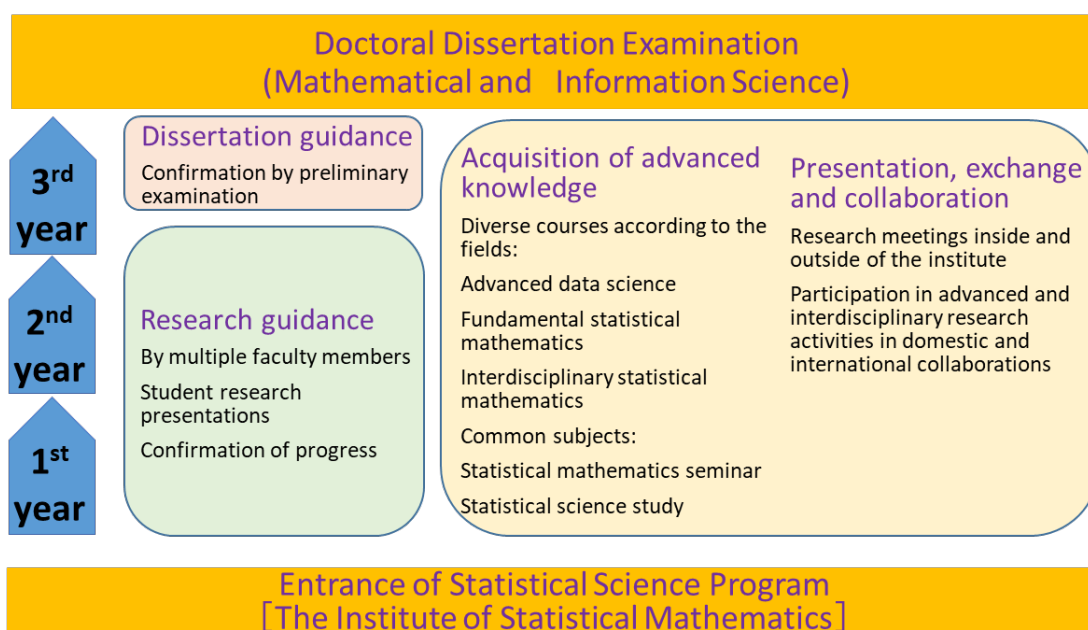
In the preparation of their doctoral dissertations, students will engage in research that is in line with their own wishes. Through research guidance and dissertation writing guidance, students will develop the ability to make accurate and logical decisions, develop a sense of ethics, and hone their ability to take on unexplored challenges with new ideas.

The following diagram shows a study model for the five-year doctoral program and the three-year doctoral program.

(1) Curriculum Model of Statistical Science Program (Five-year doctoral program)



(2) Curriculum Model of Statistical Science Program (Three-year doctoral program)



Obtaining a Degree

In addition to completing the assigned coursework, those applying for the doctoral dissertation examinations must publish at least one scholarly paper, including the content of the dissertation to be submitted, in a peer-reviewed academic journal or at a peer-reviewed international conference approved by the program. Dissertations will be evaluated for their contributions to statistical science. However, depending on the specialty, dissertations may be more broadly reviewed for contributions to science. In addition to submission and peer review of the doctoral dissertation, students are required to deliver an oral presentation and answer questions at a public dissertation presentation organized by this program. Upon passing of this examination, the student is awarded the degree of Doctor of Philosophy (Japanese : *Toukeikagaku* (statistical science) or *Gakujutsu* (science)).

In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students We Seek

We seek students with a strong interest in statistical science and a desire to solve unsolved problems and explore new fields. In particular, we seek students with high aspirations to create a new academic field that is not bound by existing academic disciplines, and to participate strongly in the construction of statistical science in

the broad sense of reasoning and acting on uncertain phenomena based on data, with a background in a variety of fields.

Selection of Students for Admission

Since statistical science is an interdisciplinary field, this program welcomes applicants from other disciplines and a wide range of backgrounds. During the admission procedures, applicants will be evaluated to check whether they are equipped with the basic academic abilities to complete their degree. For applicants to the five-year doctoral program, a written examination and an interview will be conducted to select students based on a comprehensive evaluation of their basic knowledge of mathematics and English, the research theme they wish to pursue, and their motivation to undertake research. For applicants to the three-year doctoral program, an interview will be conducted, and selection will be based on a comprehensive evaluation of the applicant's desired research theme, research content of their master's thesis or academic dissertation, basic knowledge of statistical science, aptitude as a researcher, and other factors.

Particle and Nuclear Physics Program

Program Outline

We aim to foster the next generation of researchers who will explore the origin and structure of the universe. They will study how the universe works at the very smallest and largest levels—exploring elementary particles and atomic nuclei, alongside options to study cosmology and other related fields. We will give researchers a broad perspective and high level of expertise, which will allow them to actively contribute to the future of research across many interrelated fields of science.

We offer two programs: a five-year doctoral program for students with a bachelor's degree and a three-year doctoral program for students with a master's degree. Students will belong to either the Theoretical Research Group or the Experimental Research Group of the Institute of Particle and Nuclear Studies (IPNS) at the High Energy Accelerator Research Organization (KEK). They will conduct their studies and research activities at KEK's Tsukuba Campus, Tokai Campus, the Wako Nuclear Science Center, or at experimental facilities located worldwide.

Aims for Doctoral Candidates

This program aims to develop scientists who will play an active role in the next generation of society using their expertise in particle physics, nuclear physics, and cosmology. In particular, we will develop

- Researchers who have mastered the concepts and methods of physics, understands nature from a fundamental viewpoint, and promote advanced research on elementary particles, atomic nuclei, and the universe.
- Researchers who can independently identify issues that will lead to new academic developments and produce results without being constrained by conventional thinking or methods.
- Researchers who view their work from a broad perspective, and who can expand their research themes into related areas while maintaining their core specialization.
- Researchers who can actively interact with other researchers, both domestic and international, from closely related fields, and who can cooperate to develop new areas of investigation.
- Researchers who will always be conscious of searching for the truth as the goal of research, and who can play a social role by contributing to the expansion of humanity's repository of knowledge.

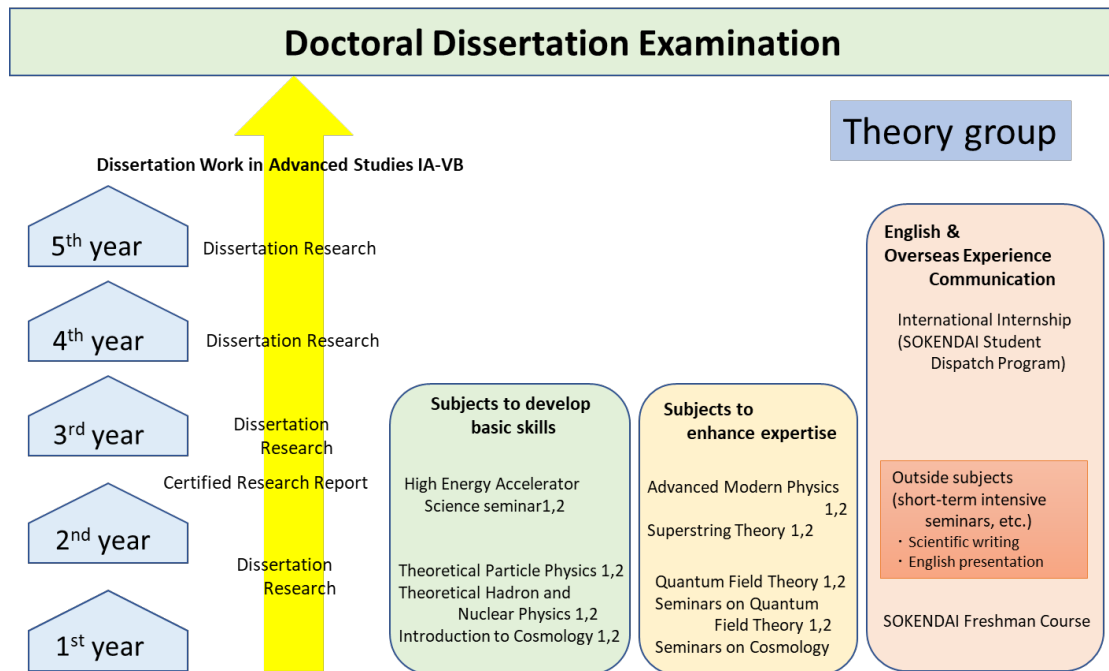
Learning and Research Activities

Students in this program will undertake the following academic and research activities to acquire the skills needed for a doctoral degree.

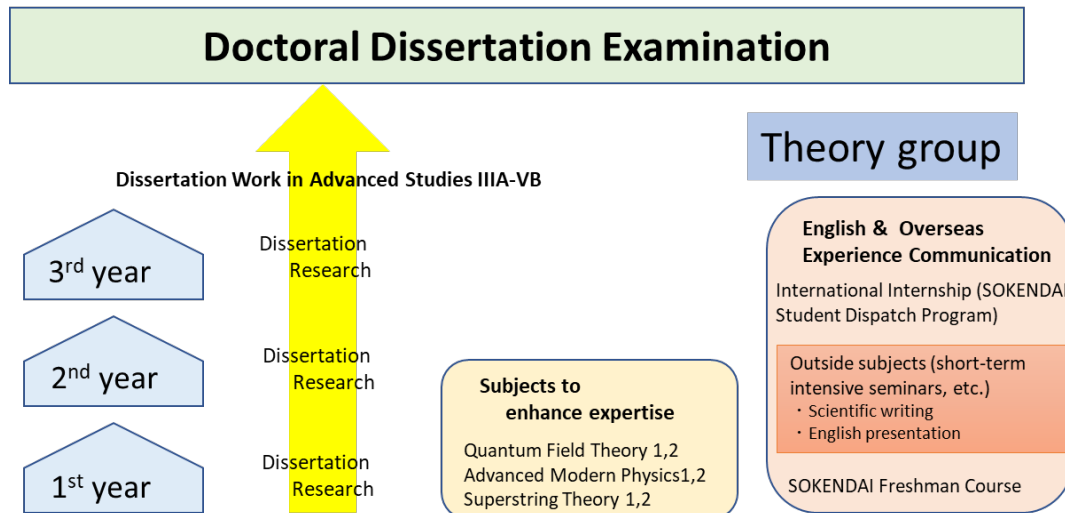
- Through lectures and exercises, students will acquire specialized knowledge of particle physics, nuclear physics, and astrophysics, as well as the methodologies necessary for their research. Furthermore, using the specialized knowledge and methodologies acquired to tackle specific research problems, students will acquire the ability to undertake all stages of research, from defining an initial idea to writing a journal paper.
- Under the guidance of multiple faculty members, students will develop their ability to tackle academically important research problems using new ideas and methodologies and to link them to results. They will take advantage of the research environment at KEK, a facility hosting one of the world's state-of-the-art particle accelerators.
- Students will acquire a broad perspective by participating in the interdisciplinary research activities conducted at KEK. They will have a flexible course structure, allowing them to study courses from across our curriculum, and they will receive personalized guidance for their research.
- Students will acquire communication skills to build an international research network through daily interactions with top researchers visiting KEK from across Japan and overseas. They will also have the opportunity to engage in research activities abroad—these activities will be supported by the SOKENDAI Student Dispatch Program, Joint Supervision Program, and Exchange Program with Overseas Researchers, as well as other related programs.
- Through the opportunity to think about the social significance of academe and the role that researchers should play, students will gain a deep understanding of the significance of researchers' place in society.

A model diagram of a sample course of study is shown below. Students can choose a combination of various courses according to their interests and specialties while preparing their doctoral dissertation.

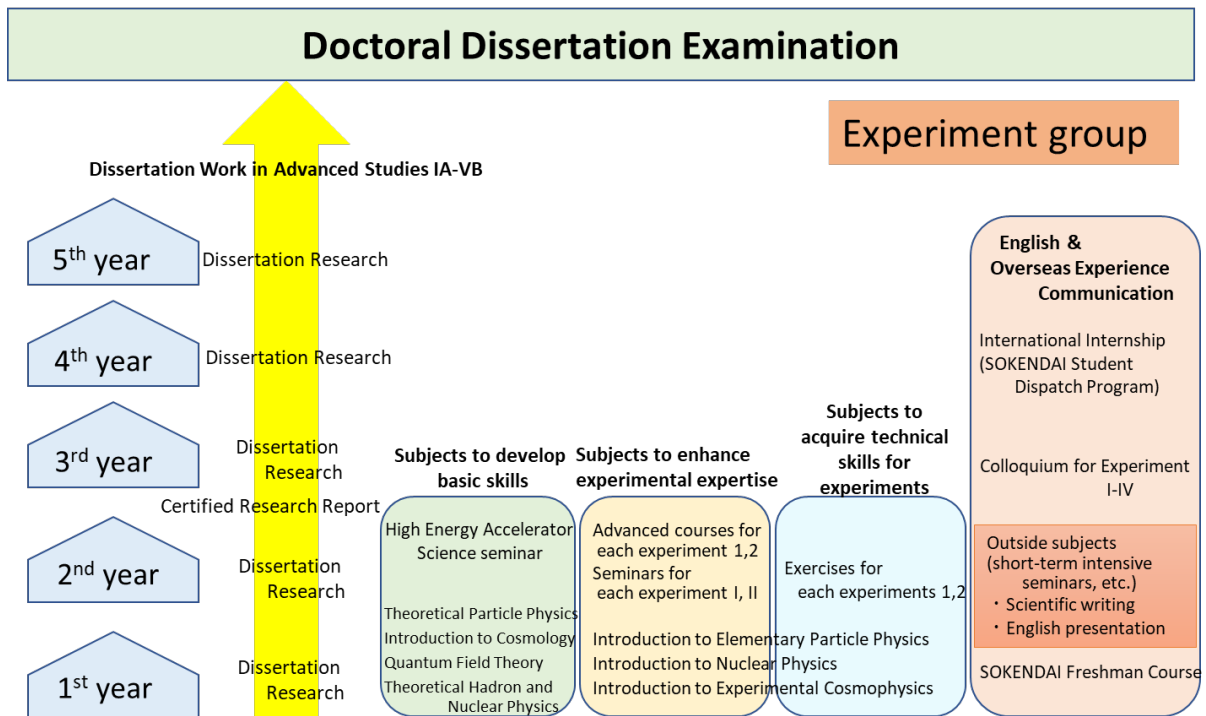
Curriculum Model of Particle and Nuclear Physics Program (Theory group)
(Five-year doctoral program)



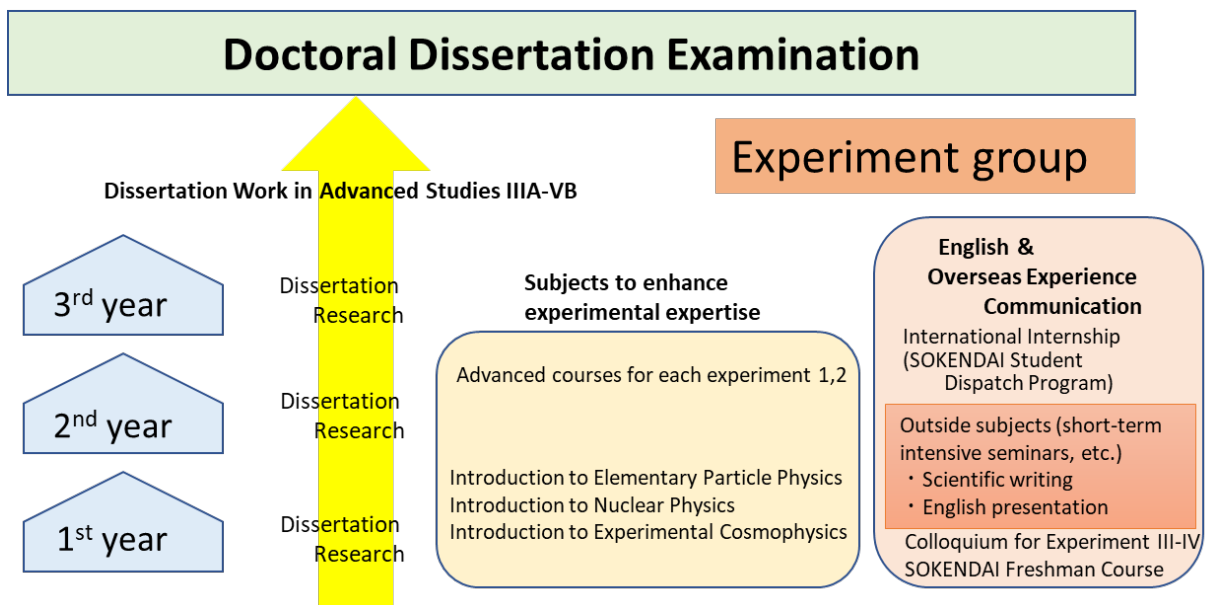
Curriculum Model of Particle and Nuclear Physics Program (Theory group)
(Three-year doctoral program)



Curriculum Model of Particle and Nuclear Physics Program (Experiment group)
(Five-year doctoral program)



Curriculum Model of Particle and Nuclear Physics Program (Experiment group)
(Three-year doctoral program)



Obtaining a Degree

Those applying for the doctoral dissertation examination must submit a doctoral dissertation in addition to completing the designated coursework. The doctoral dissertation will be reviewed by one or more external reviewers—experts affiliated with other research institutions. In addition to the submission and review of their doctoral dissertations, students are required to deliver an oral presentation and answer questions at an open dissertation presentation. Upon passing of this examination and approval of the Representative Committee in the domain of Physical Science, the student is awarded the degree of Doctor of Philosophy (Japanese: *Rigaku* 理学 or *Gakujutsuu* 学術).

Additionally, in the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students We Seek

We seek students who not only have a strong passion for science but also have the academic ability to look for new research directions, and to promote and pursue that research to produce results. This program offers admission to the five-year doctoral program (for those who have completed a bachelor's degree) and the three-year doctoral program (for those who have completed a master's degree).

Selection of Students for Admission

In selecting students for admission to this program, we emphasize that students must have sufficient basic knowledge of physics and academic skills in mathematics and English, as well as the necessary qualities to conduct advanced research: objectivity, a positive attitude, and a willingness to learn. To properly judge such abilities and qualities, we will conduct a written examination and an interview for the selection of applicants for the five-year doctoral program. For the selection of applicants for the three-year doctoral program, only an interview will be conducted to determine whether the applicant has a master's level of academic ability and specialized knowledge, in addition to the abovementioned points.

Accelerator Science Program

Program Outline

High-energy accelerators are large experimental machines for the cutting-edge research on the various components in each level of nature, from elementary particles and atomic nuclei to molecules consisting of matter including life. In recent years, accelerator science has made remarkable progress in applications that directly benefit society, such as industry and medicine. It is a complex science that consists of essence of the most advanced science and technology for the fundamental research and development of accelerators. Students in the accelerator science program acquire practical knowledge of accelerator science and conduct research from both theoretical and experimental perspectives. They can choose to study and conduct research also in the fields of radiation science, computer science, superconducting cryogenics, and mechanical engineering, which support accelerator science. Students in this program aim to become researchers who will be responsible for the future of accelerator science and contribute to promoting natural science through accelerator science.

This program consists of two programs: a five-year doctoral program for bachelor's degree holders and a three-year doctoral program for master's degree holders. Students will study and conduct research at the Accelerator Laboratory and Applied Research Laboratory of the High Energy Accelerator Research Organization (KEK), which has two large campuses in Tsukuba City and Tokai Village, Ibaraki Prefecture.

Aims for Doctoral Candidates

Students in this program systematically learn the overview of accelerator science, specialize in one of the various sciences and technologies developed in this field, and aim to become researchers who can promote advanced research that contributes to the development of the entire field. Students will acquire the originality to find and solve problems by transcending the specialized knowledge and methodological frameworks they have acquired. They will also acquire the interdisciplinary ability to discuss the significance and future prospects of their own research in the wide range of academic fields surrounding high-energy accelerators. Taking advantage of the research environment at KEK, which has one of the world's largest accelerators, students will develop international competence to collaborate with researchers regardless of nationality or culture and to disseminate their research results. Students also learn to recognize the social significance of their research and act with a sense of ethics and responsibility.

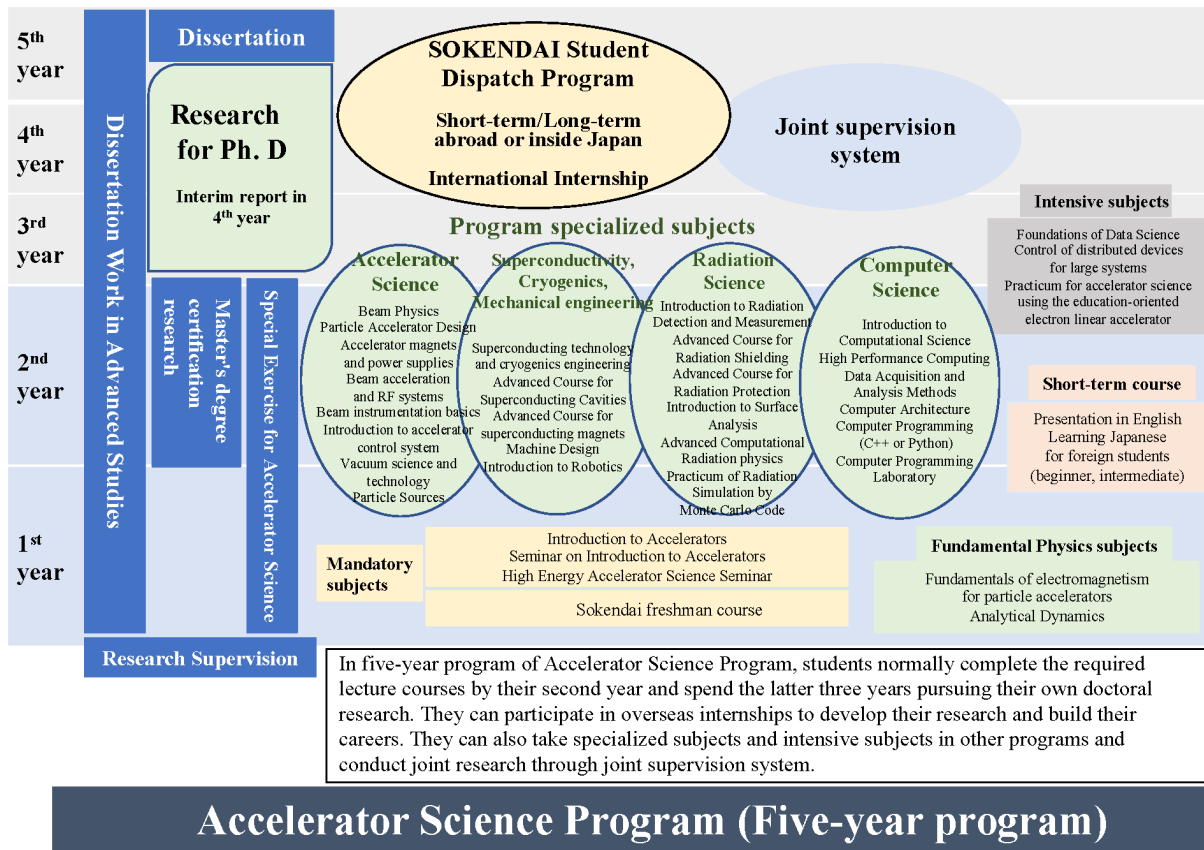
Learning and Research Activities

In this program, students will study and conduct research activities in the accelerator science or in its related fields as superconductivity and cryogenics, mechanical engineering, radiation science, and computer science.

In the five-year doctoral program, students receive consistent and continuous doctoral research guidance from a main supervisor and a sub-supervisor through research guidance and consideration courses. In the second year, all students consolidate a Master's Degree Approval Research. Students earn credits from the lecture courses required for completion of the program mainly in the first and second years, and acquire systematic knowledge that is required for promoting their doctoral thesis research in their specialized courses. In addition, through the High Energy Accelerator Science Seminar and Introduction to Accelerators, which are recommended for all students in this program, students will acquire a broad perspective that will lead to an understanding of high-energy accelerator science in general. SOKEDAI Freshman Course, offered in the form of intensive lectures immediately after admission, is a valuable opportunity for students to acquire knowledge and skills that are essential for research and to build relationships with people in other fields at SOKENDAI. Students are also encouraged to actively take courses offered in other programs of SOKENDAI.

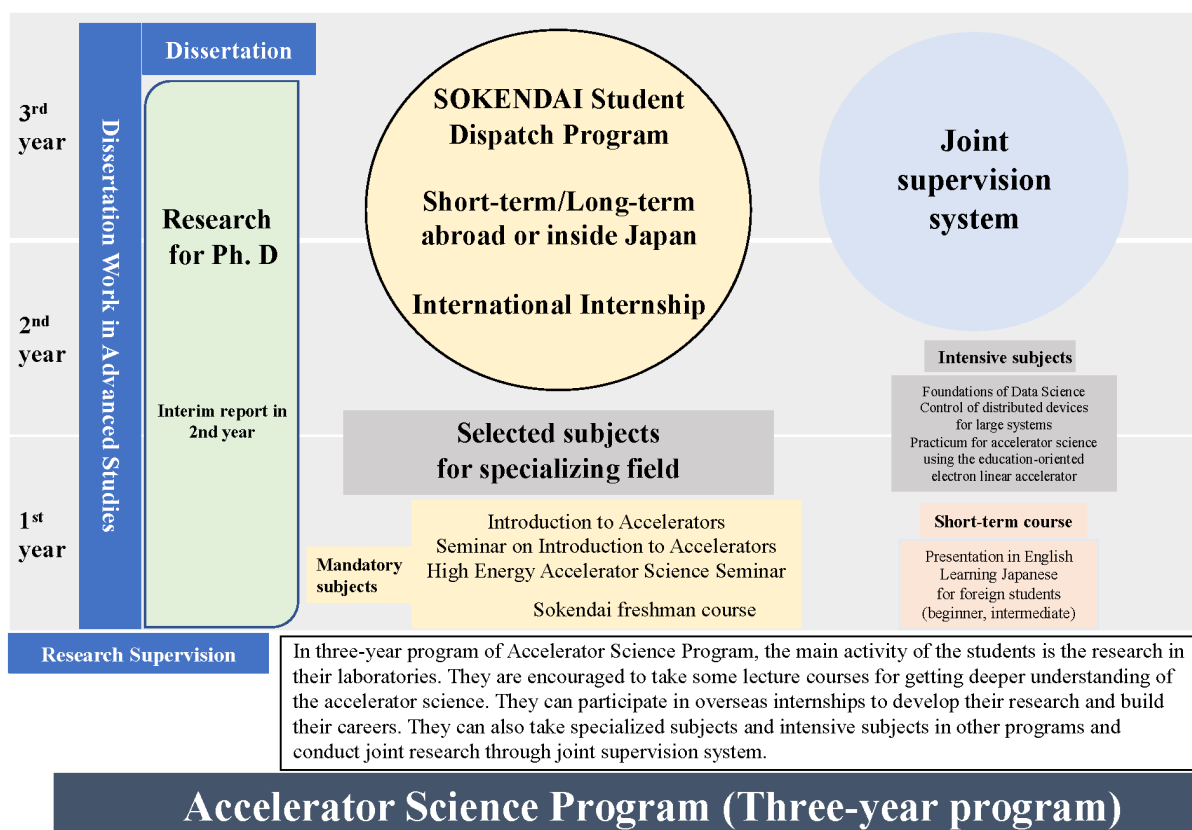
From the third year onward, the student's main activity is to pursue doctoral research with a main supervisor and a sub-supervisor. After an interim report meeting on doctoral research in the fourth year, students summarize their doctoral research in the fifth year and go through the doctoral dissertation review process. During this period, students are encouraged to use the SOKENDAI Student Dispatch Program to develop their doctoral research and build their careers through long-term research activities at universities and research facilities overseas. In addition, they may participate in the internal joint advising program to receive research guidance across multiple programs.

Curriculum Model of Accelerator Science Program (Five-year program)



The main activity of students in the three-year doctoral program is to pursue their own doctoral research under the guidance of a main supervisor and a sub-supervisor through research guidance courses. After an interim report meeting on doctoral research in the second year, students summarize their doctoral research and go through the doctoral dissertation review in the third year. SOKENDAI Freshman Course, High Energy Accelerator Science Seminar, and Introduction to Accelerators are recommended for all students, as they will help them develop a broader perspective as aspiring researchers and as those involved in high-energy accelerator science. Students are also encouraged to use the SOKENDAI Student Dispatch Program to develop their own doctoral research and build their careers through long-term research activities at universities and research facilities overseas. In addition, they may participate in the internal joint advising program to receive research guidance across multiple programs.

Curriculum Model of Accelerator Science Program (Three-year program)



Obtaining a Degree

Students who apply for the doctoral dissertation examinations are required to submit an original doctoral dissertation based on research conducted independently. The contents of the dissertation must have been published in an academic journal with an established review system. It is prepared after the student completes the requirements for this program and acquiring basic knowledge and education in the academic field in which they specialize. After a preliminary examination conducted mainly by members of the program review committee, the doctoral dissertation will be reviewed by the main review committee, which includes one or more experts from other research institutions (external reviewers). Students are required to deliver an oral presentation and answer questions at a public presentation of their dissertation. Students who are deemed successful by the review committee and approved by the Accelerator Science program Committee and the Representative Committee of Physical Sciences Area will be awarded the degree of Doctor of Philosophy.

In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students We Seek

In addition to students who are interested in research and development of high-energy accelerators, we are looking for those who wish to contribute to the development of their current research field of interest through accelerator research and development, those who wish to test their abilities in the field of accelerator science, and those who wish to work in collaboration with others in the creation of products. This program offers admission to the five-year doctoral program (for those who have completed a bachelor's degree) and the three-year doctoral program (for those who have completed a master's degree).

Selecting of Students for Admission

<Basic Concept of Selection for Admission to the Five-Year Doctoral Program>

Admission is based on a screening of documents, a written examination (mathematics, English, and specialized subjects), and an interview. Any amount of expertise in accelerator science is acceptable. In the interview, in addition to the applicant's motivation and basic academic ability, we will evaluate the applicant's willingness and ability to acquire new knowledge and information necessary for research, as well as their logical thinking ability.

<Basic Concept of Selection for Admission to the Three-Year Doctoral Program>

Admission is based on screening of documents and an interview. In the interview, in addition to the abovementioned points, we will place importance on the applicant's willingness to engage in research in accelerator science and related fields, and their ability to plan and conduct research.

Astronomical Science Program

Program Outline

Astronomical Science Program offers advanced education and research through a wide range of observational and theoretical studies with state-of-the-art optical-infrared and radio telescopes. This program covers the development and application of advanced new technologies fundamental to astronomical observation; the design, fabrication, and experimentation of new observational instruments; the development of data acquisition and analysis methods; the development of technologies ranging from basic to advanced observational astronomy; as well as observational research using these technologies and theoretical research using supercomputers.

The program offers a five-year doctoral program for bachelor's degree holders and a three-year doctoral program for master's degree holders. Graduate students enrolled in the program will conduct their studies and research activities at the National Astronomical Observatory of Japan (NAOJ), based in Mitaka City, Tokyo.

Aims for Doctoral Candidates

This program focuses on observational and theoretical research, along with instrumentation research for astronomy and related fields. The program's infrastructure provides the world's most advanced research environment with the state-of-the-art observational instruments as well as supercomputers. We aim to foster 1) researchers who can play an active role at the forefront of the international research; 2) specialists who will play leading roles in development of advanced technologies; and 3) personnel who will work to promote science against the backdrop of advanced scientific knowledge. We also emphasize the importance of having a broad interdisciplinary perspective in conducting research. Ethical conduct as a researcher is also essential.

Learning and Research Activities

Graduate students in this program receive research guidance from multiple supervisors in the program, consisting of a main supervisor, a sub-supervisor, and an assistant supervisor. The curriculum is based on systematic guidance to enable students to conduct observational, theoretical, or developmental research independently, and is designed to cultivate (1) basic knowledge in natural science in general, (2) specialized knowledge and research skills in astronomical science and related fields, and (3) communication skills required for international research activity and disseminating specialized knowledge and technology to society. A well-balanced study of courses are offered in the fields of optical-infrared astronomy, radio astronomy, and common basic astronomy.

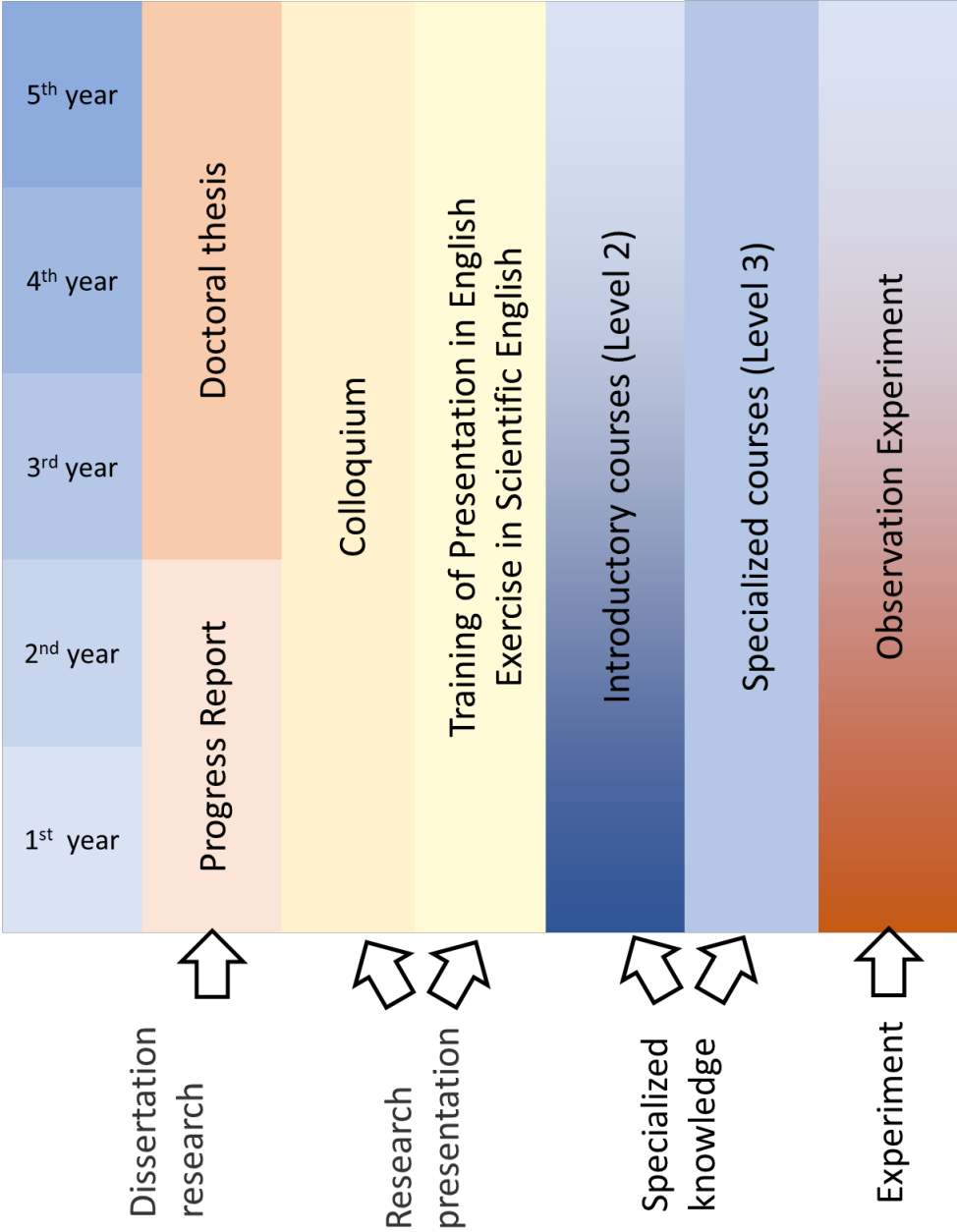
Given the variation in the amount of astronomy students have studied during their undergraduate years, the program is designed to meet the needs of each student by

offering a wide range of courses, from basic introductory courses to specialized courses that teach state-of-the-art science in each field. While the course-taking process should vary depending on the student's research topic, a broad perspective is also essential. Students must consult their supervisors to create the study plan that is most suitable for them.

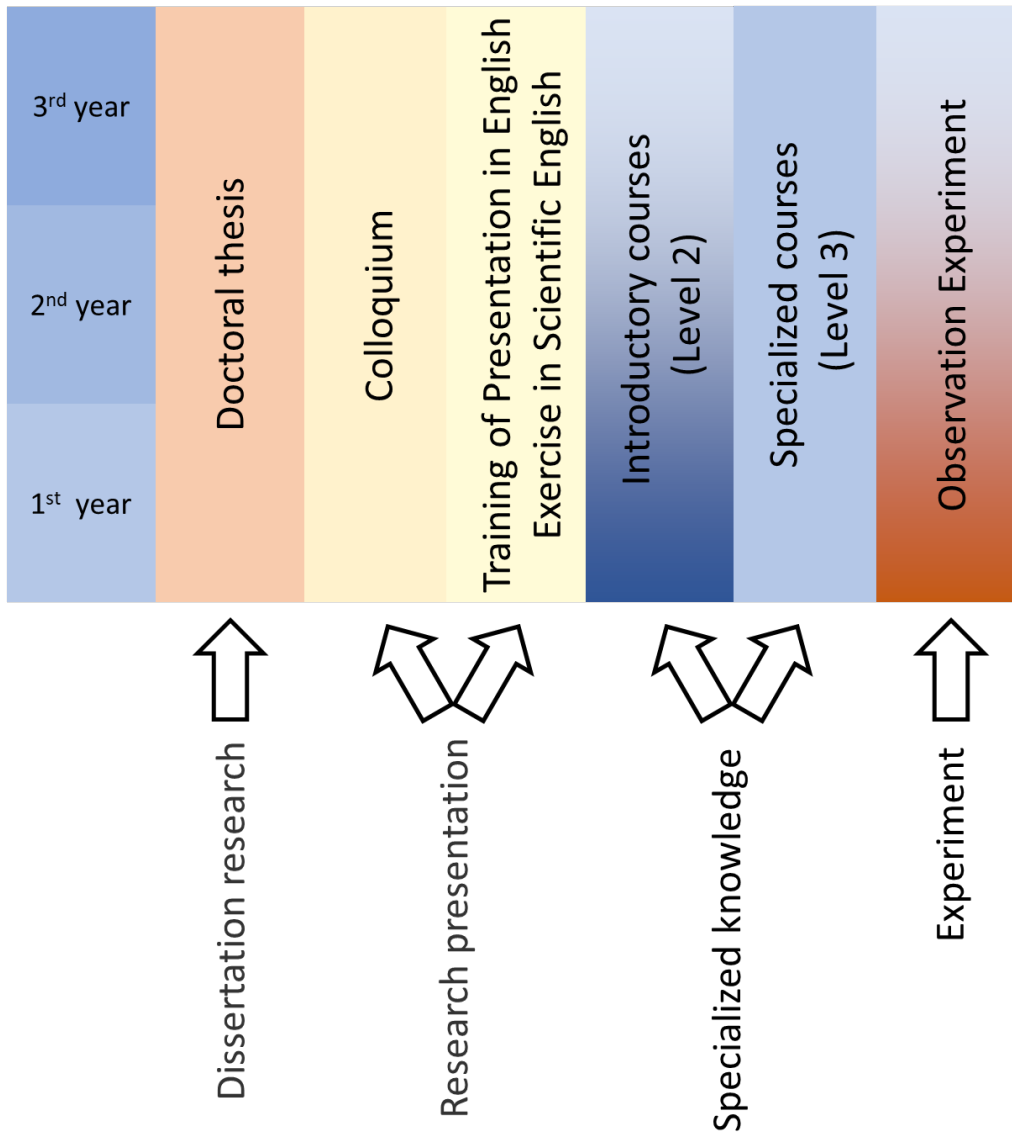
In the practical training courses, students learn the fundamentals of observation through hands-on observation with optical and radio telescopes. Seminars in small groups provide practical and active educational opportunities. In the colloquium courses, students periodically deliver presentations on their research in English, thereby systematically developing their presentation and discussion skills in English. In addition, they also take courses such as Exercise in Scientific English and Training of Presentation in English. In Introduction to Scientific Communication, students develop the ability to communicate their specialized knowledge and skills to society. To cultivate internationality and strengthen research capabilities, we also encourage students to take advantage of the SOKENDAI internship program to seek supervision from leading researchers in Japan and abroad. In Astronomical Science program, students are expected to present the progress of their research to the faculty members of the program regularly. In the case of the five-year doctoral program, students complete the Progress Report (Specific Theme Research, in the second year), Doctoral-Course Midterm Presentation (usually in the fourth year), and the preliminary defense of the doctoral thesis (in the fifth year). In the case of the three-year doctoral program, students prepare for Doctoral-Course Midterm Presentation (usually in the second year), and the preliminary defense of their doctoral thesis (in the third year). The instructors will review and advise the students on the progress of their research; in turn, the students provide feedback to their supervisors on their supervision strategies.

SOKENDAI also encourages students to take courses offered by other programs or receive joint instruction from faculty members of other programs, based on the student's topics and research progress.

5-year doctoral program



3-year doctoral program



Obtaining a Degree

The degree is awarded to those who are recognized as having acquired the ability to independently pursue observational, theoretical, or developmental research that adds original and new knowledge in astronomical science and related fields, either as individuals who advance research and the development of advanced technology at the forefront of the world or as individuals involved in the promotion of science with advanced scientific backgrounds. We require that 1) the dissertation work is published in a peer-reviewed, scientific journal in a European language, with the candidate as the primary author, or is to be published within one year of the conferral of the degree; and 2) one paper is already published in a peer-reviewed, scientific journal in a European language, with the candidate as the primary author. The first item is a

requirement regarding the standard of the dissertation research, and the second item is a requirement for objective assurance that the student has the ability to conduct research. If the content of the dissertation research has already been published, then both items are satisfied. If the content of the doctoral thesis research has not yet been published, then 1) and 2) must be satisfied separately, but the content of the paper in 2) does not have to be included in the doctoral thesis. If the content of the doctoral thesis research has not been published, then 1) and 2) must be satisfied separately, but the content of the paper in 2) does not have to be included in the doctoral thesis.

In the five-year doctoral program, a master's degree can be conferred upon fulfillment of certain conditions.

For Prospective Students

Type of Students We Seek

Astronomical Science Program seeks students with a strong interest in astronomy and the Universe, as well as a passion for unraveling unsolved problems through theoretical, observational, and instrument development research. We seek students who have not only basic academic skills but also the needed theoretical and creative aptitude for advanced research.

Selection of Students for Admission

The selection of applicants is based on a comprehensive evaluation of the applicant's basic knowledge and understanding of physics and mathematics, English proficiency, logicity, creativity, motivation for research, and potential ability. Applicants to the doctoral program are also determined based on their ability to obtain a doctoral degree within a designated period of time.

Fusion Science Program

Program Outline

The Fusion Science program fosters integrated science and engineering scholars who have a systematic understanding of the wide range of science and engineering fields required for the early realization of fusion reactors and who are capable of working in a variety of research fields. By conducting advanced research (experimental, theoretical, etc.), rationally understanding research results, and taking on unexplored research challenges, our students acquire new technologies and skills with high value and contribute to the realization of fusion energy and other human developments.

This program consists of a five-year doctoral program for bachelor's degree holder and a three-year doctoral program for master's degree holder. Students will conduct their studies and research activities at the National Institute for Fusion Science (NIFS), located in Toki City, Gifu Prefecture.

Aims for Doctoral Candidates

This program aims to produce high-level researchers who have a strong interest and passion for a wide range of research from basic to applied research for the realization of fusion power generation, and who possess keen insight, deep intellect, and rich sensitivity, as well as good sense, broad vision, and international competence as researchers. This program aims to nurture researchers who understand the significance and importance of natural science and contribute to the harmony and development of natural science, humankind, and society, while building on the high level of expertise acquired in this program.

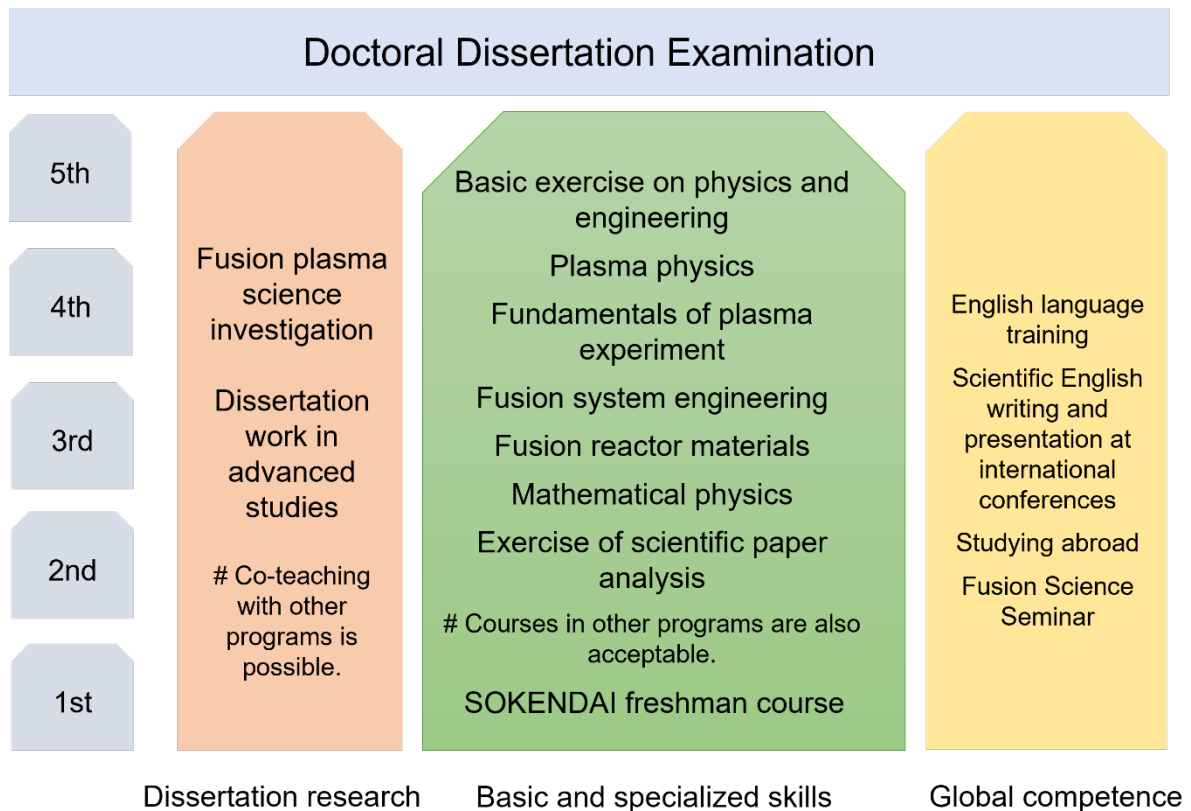
Learning and Research Activities

Students will take courses to acquire education and advanced knowledge in a wide range of research fields surrounding fusion science, as well as tailor-made exercises, investigations, and thesis writing guidance related to their research topics. Through these, students will develop the ability to understand their own research topics and to promote their own research independently. In addition, students will develop the ability to actively address unsolved problems in fusion science and promote research. SOKENDAI encourages students to take courses in other programs based on their own interest and to receive joint instruction from faculty members of other programs. This program includes courses and seminars in standard Japanese and English, English language training, international lectures and seminars, and international internships that allow students to study abroad for short or long periods. Through guidance in writing international academic papers in English, students will hone their ability to disseminate academic research results internationally. Through active participation in these curricula,

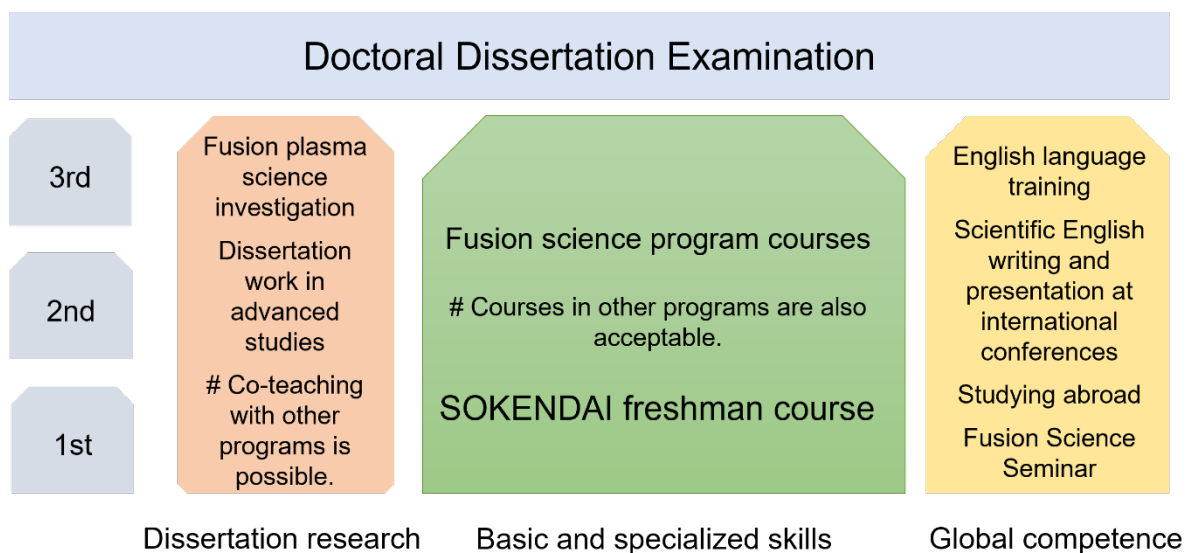
students are expected to acquire a broad perspective on their research field, as well as global competence, social skill, and research integrity.

The following chart illustrates the course of study model for the five-year and three-year doctoral program.

(1) Curriculum model for five-year doctoral program



(2) Curriculum model for three-year doctoral program



Obtaining a Degree

To receive the doctoral degree, students must complete the assigned coursework and publish at least one scholarly article that includes the content of the doctoral dissertation to be submitted in an international peer-reviewed journal.

Doctoral dissertation examinations are conducted mainly in the Physical Sciences field, but depending on the nature of the research, it may be possible to undergo a doctoral dissertation examination in other fields. In addition, two or more experts (external reviewers) affiliated with other research institutions or universities will participate in the peer review of doctoral dissertations. In addition to submission and peer review of the doctoral dissertation, students are required to deliver an oral presentation and answer questions at a public dissertation presentation organized by the program. Those who pass these examinations are awarded the degree of Doctor of Philosophy (Japanese: *Rigaku* 理学, *Kougaku* 工学 or *Gakujutsu* 学術).

In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students We Seek

We seek students who have a strong interest in and passion for a wide range of research, from basic to applied, toward the realization of fusion power generation, and who are suitable to be trained as advanced researchers with keen insight, deep intellect, rich sensitivity, good sense, and a broad perspective as researchers. Admission to the five-year doctoral program (for those who have completed a bachelor's degree) and the three-year doctoral program (for those who have completed a master's degree) is available.

Selection of Students for Admission

In selecting applicants, we emphasize basic academic ability, research planning ability, and logical thinking and consideration ability to conduct research in fusion reactor engineering, including plasma science and engineering (experimental and theoretical), superconductivity technology development, and materials engineering. To properly judge such abilities, the selection process is conducted with a focus on basic academic ability and logic for those who enter the five-year doctoral program, and on research promotion ability and ability to think logically for those who enter the three-year doctoral program.

Space and Astronautical Science Program

Program Outline

The Space and Astronautical Science Program provides advanced education and research guidance through theoretical research, analysis of observational data, and practical research and development in astrophysics, solar system science, and space engineering. The program fosters researchers with a broad perspective and internationally advanced abilities, as well as individuals who contribute to society with advanced expertise. In particular, through close contact with cutting-edge, large-scale space projects, the program cultivates not only a rich academic background in space science but also the ability to plan space projects.

This program consists of two programs: a five-year doctoral program for bachelor's degree holder and a three-year doctoral program for master's degree holder. Students will conduct their studies and research activities at the Institute of Space and Astronautical Science (ISAS) located in Sagami-hara, Kanagawa Prefecture.

Aims for Doctoral Candidates

This program aims to conduct cross-disciplinary and interdisciplinary education and research in space science, integrating science and engineering. It also aims to develop researchers who will lead future space science and related technologies and doctoral students who will support the development and utilization of the entire field of aerospace, with the following competencies as independent researchers.

- The ability to promote advanced research and development with cutting-edge and systematic expertise in space science using space flight or space engineering for research and development of space technology, as well as in these interdisciplinary fields.
- The ability to demonstrate outstanding expertise and to lead research that will produce new developments in the field based on a broad perspective that is not confined to a specialized field.
- The ability to lead international joint research and development, with communication skills to actively interact with diverse researchers at home and abroad, cooperative skills to work in international research groups, and leadership skills.
- The ability to understand the social role and significance of space science and engineering and to contribute to the development of science and technology in harmony with humankind and society with a high sense of ethics and responsibility as a researcher.

Learning and Research Activities

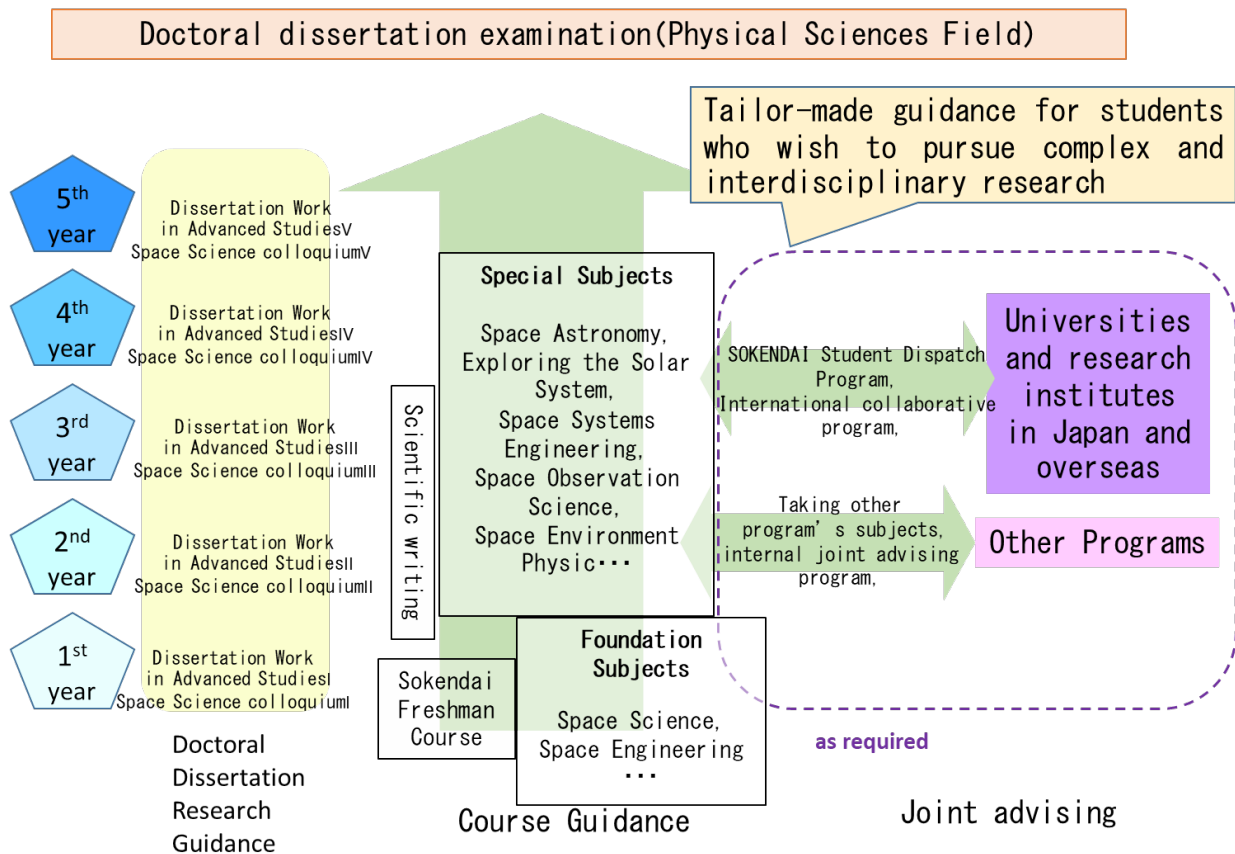
Students in this program will undertake the following academic and research activities to acquire competencies appropriate to the doctoral degree

(Five-year doctoral program)

1. Through the SOKENDAI Freshman Course, students will develop research ethics and communication skills essential for researchers and professionals.
2. This program includes various courses in the fields of space science (Space Astronomy and Exploring the Solar System), space engineering, and space environmental science. Students will acquire basic knowledge and skills in each field through introductory courses (e. g., Space Science, Space Engineering).
3. Students will take Scientific writing 1 and 2 to develop their communication skills in English.
4. By the second semester of the first year, students will begin their doctoral dissertation research under a multiple supervisor system consisting of one main supervisor and one or more sub-supervisors (Dissertation Work in Advanced Studies IA-VB).
5. Depending on their doctoral dissertation theme, students will take advanced courses in that field to learn cutting-edge knowledge and acquire a high level of expertise.
6. Students are required to deliver a presentation on the progress of their research at least once a semester (Space Science Colloquium IA-VB) and receive advice from faculty members other than their supervisors. Through these activities, students will complete their doctoral dissertation research with sharp expertise and a broad perspective.
7. Students will engage in research assistance for academic research and research and development at JAXA by utilizing the Research Assistant (RA) system, which is unique to this program, to enhance their research execution skills as young researchers. In addition, students will conduct Field Work, in which they will plan their own external research and participate in advanced scientific satellite projects as needed.

The following is a model diagram of Space and Astronautical Science Program of study (five-year doctoral program).

(1) Curriculum model for five-year doctoral program



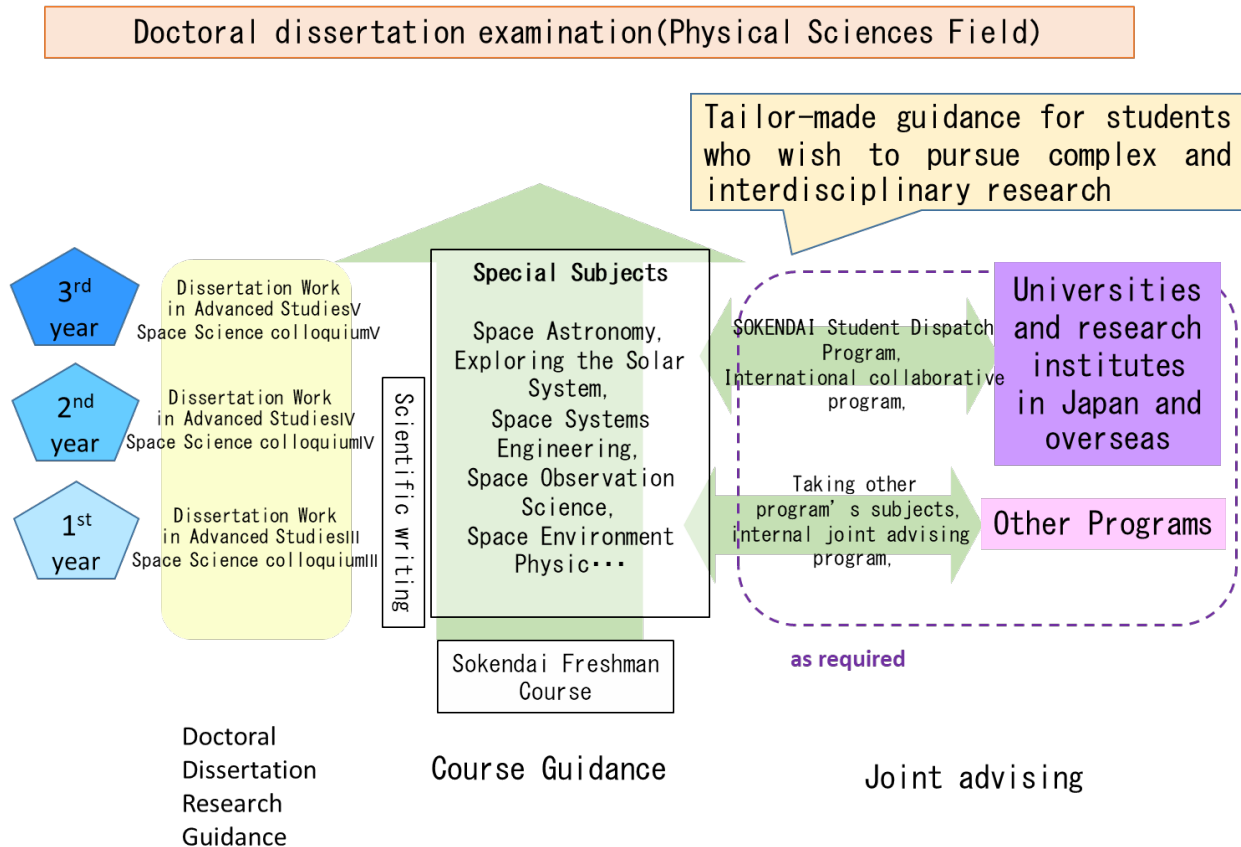
(Three-year doctoral program)

1. Through the SOKENDAI Freshman Course, students will develop research ethics and communication skills essential for researchers and professionals.
2. Students will take Scientific Writing 1 and 2 to develop communication skills in English.
3. Immediately after admission, students will begin doctoral dissertation research under the multiple supervisor system consisting of one main supervisor and one or more sub-supervisors (Dissertation Work in Advanced Studies IIIA–VB).
4. Depending on their doctoral dissertation theme, student will take advanced courses in that field to learn cutting-edge knowledge and acquire a high level of expertise.
5. Students are required to deliver a presentation on the progress of their research at least once a semester (Space Science Colloquium IIIA–VB) and receive advice from faculty members other than their supervisors. Through these activities, students will complete their doctoral dissertation research with sharp expertise and a broad perspective.
6. By utilizing the program's unique research assistant system and engaging in research assistance work for academic research and R&D at JAXA, students will improve their abilities to conduct research as young researchers. In addition, students will plan

their own external research and conduct space science projects by participating in cutting-edge scientific satellite projects as needed.

The following is a model diagram of Space and Astronautical Science Program of study (three-year doctoral program).

(2) Curriculum model for three-year doctoral program



At SOKENDAI, students are not limited to the program to which they belong but are encouraged to select courses from 19 other programs according to their own interests and specialties. Students may also apply for the Internal Joint Advising Program, as well as SOKENDAI Student Dispatch Program and the International Collaborative Program. SOKENDAI can set up a curriculum tailored to students who aspire to engage in multidisciplinary and interdisciplinary research.

Obtaining a Degree

In addition to completing the designated coursework, those applying for the doctoral dissertation examinations must submit at least one academic paper that includes the content of the doctoral dissertation to be submitted and that has been or could be published in an academic journal.

At least one external expert will participate in the doctoral dissertation examinations. In addition to submitting their doctoral dissertation, students are required to deliver an oral presentation and answer questions at a public dissertation presentation organized by the program. Those who pass these examinations are awarded the degree of Doctor of Philosophy (Japanese: *Rigaku* 理学, *Kougaku* 工学 or *Gakujutsu* 学術). In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students we Seek

This program seeks students who have a strong interest in space science, or in using space flight or space engineering, for research and development of space technology, and who possess the basic academic skills required for problem solving, logical organization, applied skills, and communication skills necessary for independent and collaborative learning in an international research environment.

Selection of Students for Admission

The decision of acceptance or rejection for admission is based on a comprehensive evaluation of each of the following: document screening (including English examination), written examination (mathematics and physics), and interview. For the three-year doctoral program, the screening consists of document screening (including English examination) and interview. Special attention will be paid to the following points.

- We will comprehensively confirm that the applicant has the basic academic skills necessary to conduct research based on their screening documents, a written examination, and an interview.
- The applicant must have a strong interest in space science and inquisitive mind for using space flight or space engineering for research and development of space technology.
- The applicant should possess the basic academic skills, logical organization, and applied skills necessary to acquire cutting-edge specialized knowledge and to solve problems in the field of space science and engineering.
- The applicant should possess the communication skills necessary to work and learn independently and collaboratively in an international research environment.
- The applicant should be able to conduct research with a strong sense of contribution to society and with a high sense of ethics.

Molecular Science Program

Program Outline

The Molecular Science Program establishes a systematic understanding of molecules, the basic building blocks of matter, and trains the next generation of researchers to unravel the wide variety of phenomena exhibited by matter. We aim to produce graduates who can conduct advanced research (e.g., experiments, measurements, theory), rationally understand research results, challenge unexplored issues from free inspiration, pursue new intellectual values and universal truths, and contribute to human development based on molecular science.

This program consists of two programs: a five-year doctoral program for bachelor's degree holders and a three-year doctoral program for master's degree holders. Students will conduct their studies and research activities at the National Institute for Molecular Science, located in Okazaki, Aichi Prefecture.

Aims for Doctoral Candidates

This program aims to promote advanced research in specialized fields (through experiments, measurements, theory, etc.) with a wide range of education and academic and systematic, cutting-edge knowledge in the field of molecular science. Students are expected to gain a deep and rational understanding of phenomena and to go one step further to create intellectual value by taking on unexplored challenges based on their own free ideas. Students will develop the ability to present a truly universal “step” to the world. They will also acquire interdisciplinary skills that will enable them to propose flexible and rational solutions to issues in peripheral fields while maintaining their own expertise. Students will understand the significance and importance of natural science, revere the universal truths of natural science, and contribute to the harmony and development of natural science with humanity and society.

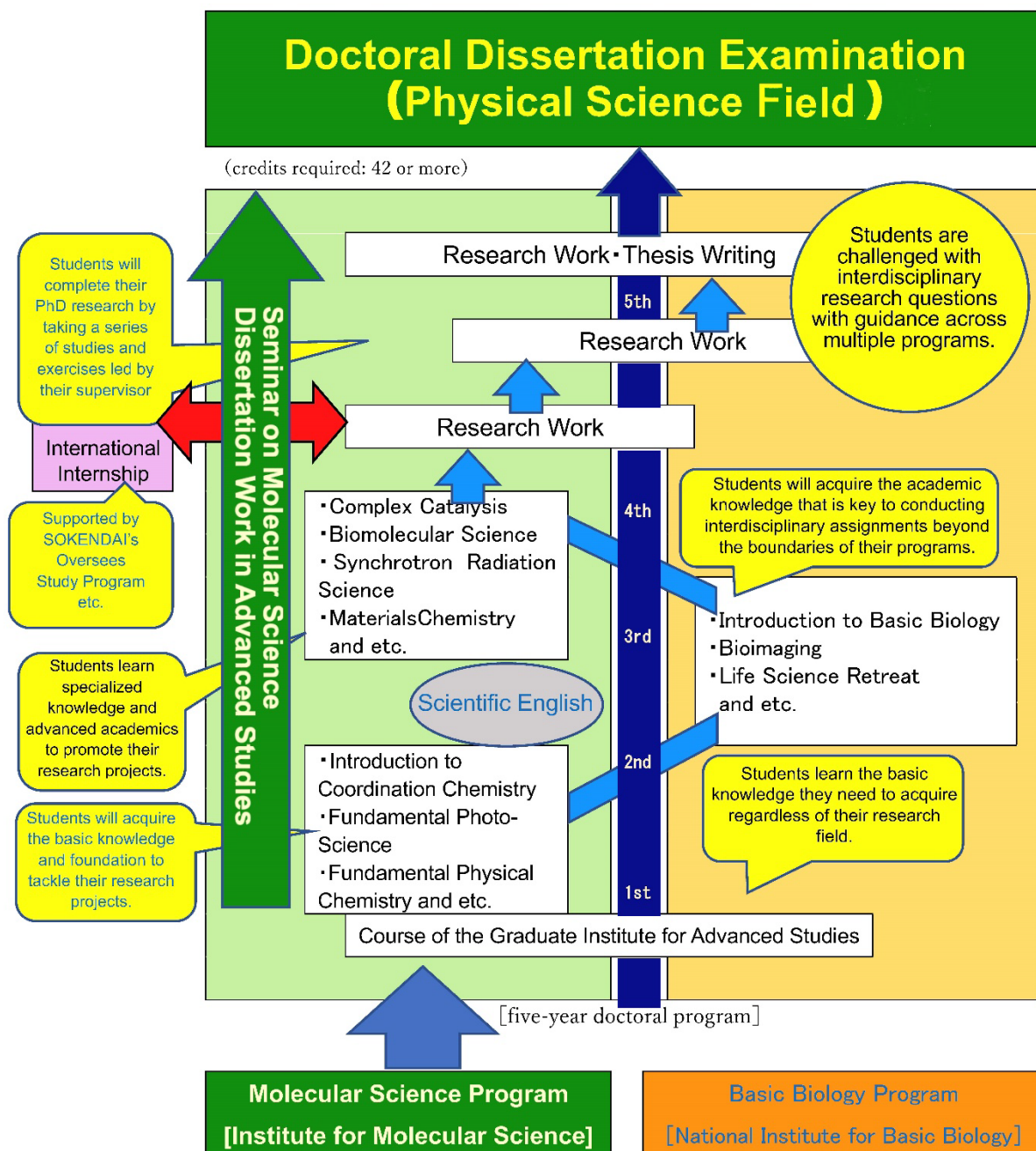
Learning and Research Activities

In addition to courses (classroom lectures) to acquire broad education and advanced knowledge in molecular science and related fields, this program includes tailor-made exercises, research, and thesis writing guidance related to each research topic. Through these activities, students will develop the ability to understand their own research and promote them independently. This program takes students one step further and cultivates their ability to identify new research problems and promote research toward solutions on their own. At SOKENDAI, students are not limited to the program to which they belong, based on their own ideas, but are encouraged to take courses in other programs and receive joint instruction from faculty members in other programs. Students expand their interdisciplinary horizons through a tailor-made curriculum that transcends program frameworks. SOKENDAN offers courses and seminars with English as the standard,

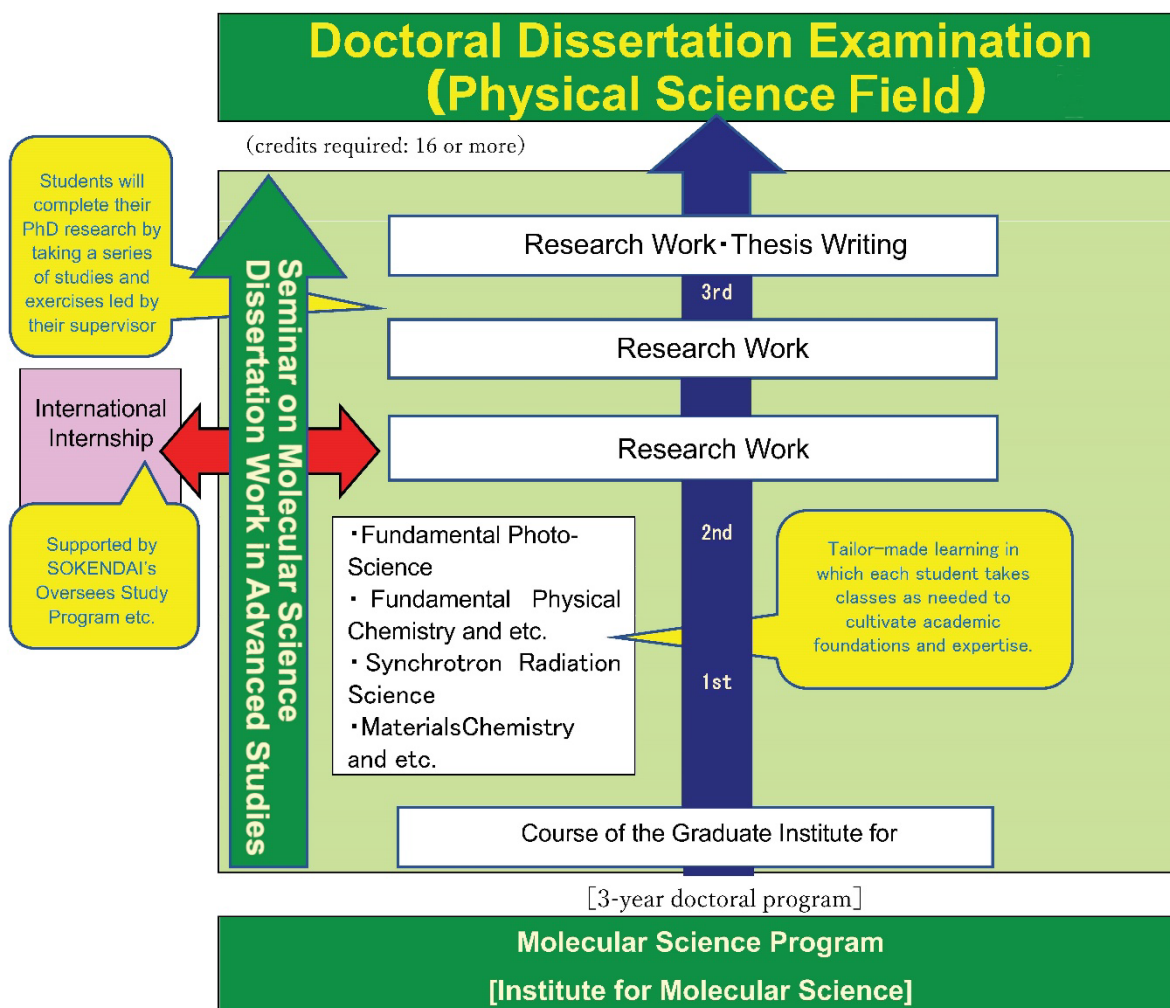
international lectures and workshops, and opportunities for short-term study abroad through international internships. The Institute for Molecular Science welcomes many overseas students and researchers, and fosters active exchanges that transcend national and cultural boundaries. Through guidance in writing international academic papers in English, students will hone their ability to disseminate academic research results internationally. We also hope that students will become talented individuals who can think about the social significance of various academic fields beyond their individual areas of specialization and the role of researchers in society.

The following figure shows a model of the five-year doctoral program including joint instruction with other programs and an internship abroad, as well as a model of the three-year doctoral program for a specialization in the Molecular Science Program.

(1)Curriculum model for five-year doctoral program



(2) Curriculum model for three-year doctoral program



Obtaining a Degree

In addition to completing the designated coursework, those applying for the doctoral dissertation examinations must publish at least one academic paper in an international journal that includes the content of the dissertation to be submitted. Doctoral dissertation examinations are mainly reviewed in the Physical Science field but may be reviewed in other fields, such as the Life Science field, depending on the specialty of the doctoral dissertation research. In addition, at least one expert from another research institution (external reviewer) will participate in the peer review of doctoral dissertations. Moreover, students are required to deliver an oral presentation and answer questions at a public dissertation presentation organized by the program. Those who pass these examinations are awarded the degree of Doctor of Philosophy (Japanese : *Rigaku* 理学 or *Gakujutsu* 学術). In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Prospective Students

The Molecular Science Program seeks students who have a strong interest in research and who, while taking a bird's-eye view of molecular science and its peripheral fields of science, have the will and enthusiasm to work internationally, continually polishing their rich intellect and sensitivity with the aim of conducting research that will open up a new era. This program offers admission to the five-year doctoral program (for those who have completed a bachelor's degree) and three-year doctoral program (for those who have completed a master's degree).

Selection of Students for Admission

In selecting applicants for this program, we place importance on basic academic, research planning, and logical thinking ability to independently promote basic and applied research in molecular science. To properly judge such abilities, the selection committee focuses on basic academic ability and logicity for those who enter the five-year doctoral program, and on the ability to promote research and think logically for those who enter the three-year doctoral program.

Materials Structure Science Program

Program Outline

The Materials Structure Science program conducts cutting-edge scientific research using quantum beams, such as synchrotron radiation, neutrons, muons, and slow positrons obtained from advanced accelerators. In this program, we train researchers who will pioneer fundamental and cutting-edge research to elucidate the structure and function of materials in an extremely wide range of research fields, including physics and chemistry, materials science, life science, medicine, environmental science, and earth science. By promoting research on further advancement of quantum beam generation and utilization technologies, this program aims to produce PhDs who will contribute to the development of a new frontier in materials structure science.

We offer two programs: a five-year doctoral program accepting bachelor's degree holders and a three-year doctoral program accepting master's degree holders. Students will conduct their studies and research activities at the High Energy Accelerator Research Organization (KEK) Institute of Materials Structure Science, located in Tsukuba and Tokai, Ibaraki Prefecture.

Aims for Doctoral Candidates

Students in this program acquire knowledge and methodologies accumulated in the research field of material structure science using quantum beams generated from particle accelerators, and then apply them to promote advanced research. Students are expected to gain a deep understanding of phenomena through experimental and theoretical research, to proactively challenge unexplored issues in material structure science, and to contribute to the development of the research field. For this purpose, students must have broad knowledge of the specialized areas in material structure science, as well as the insight to understand and discuss issues in the surrounding fields. Through international research exchange, students disseminate academic results with a high degree of universality. Students will then become researchers who are aware of the social significance and positioning of the academic research they conduct, and who are able to act with a sense of ethics and responsibility.

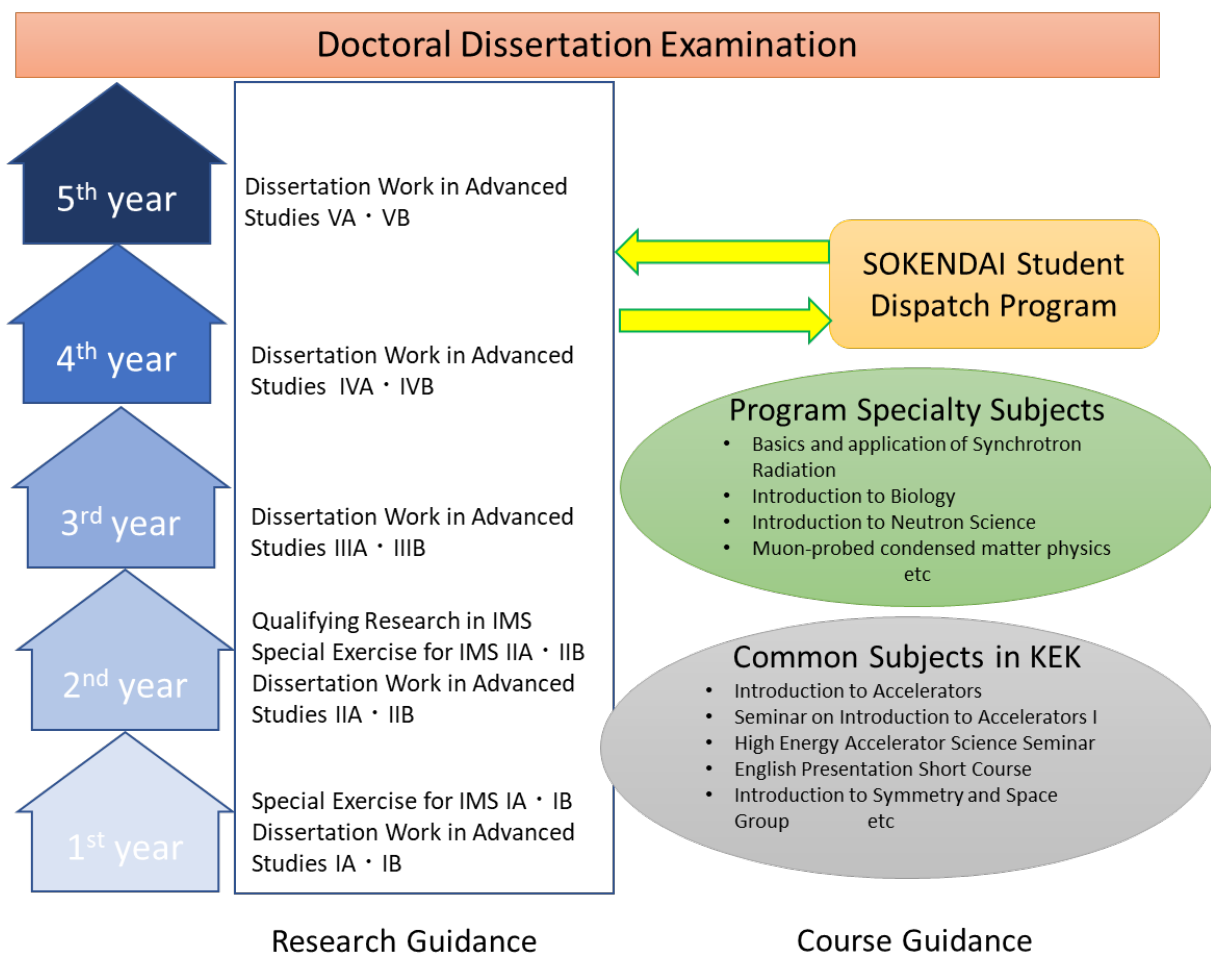
Learning and Research Activities

Through lectures and practical training on structural materials science using quantum beams and the knowledge and methodologies accumulated in related fields, students will deepen their understanding of specialized fields and receive guidance in writing papers tailored to their individual expertise. In turn, students will enhance their understanding of research topics and their ability to promote advanced research. Students will work independently on their dissertation research under the guidance of multiple faculty members in an environment that utilizes cutting-edge research equipment

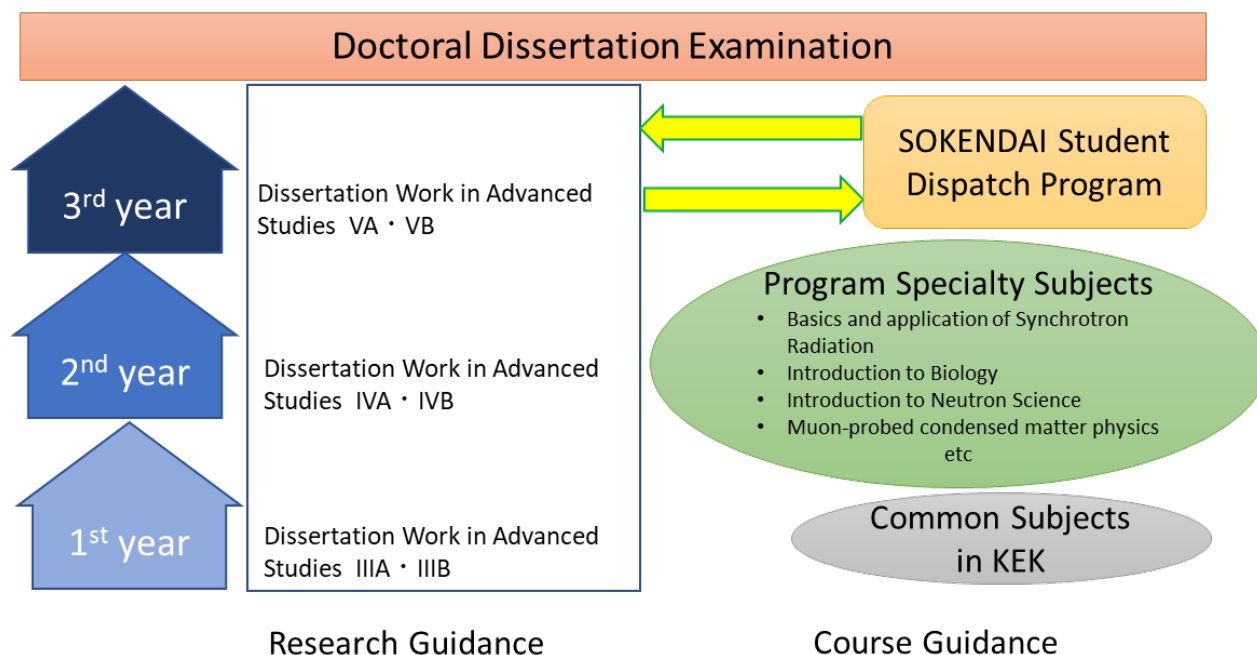
in a large facility. In an environment where researchers from a wide range of specialized fields gather, students hone their skills to take on unexplored challenges and come up with new ideas. Students can gain an interdisciplinary perspective through practical learning opportunities, such as high-energy accelerator science seminars common to all three programs at KEK, inter-program integration programs, and interaction with researchers in different fields of expertise, such as joint users at KEK. In addition, through the SOKENDAI Student Dispatch Program, Joint Supervision Program, and exchange programs, students can nurture competitive research skills and form international collaborative research networks. Through daily research guidance for dissertation preparation and practical research ethics education programs provided by KEK and SOKENDAI, students will have opportunities to consider the social significance of academia and the roles and responsibilities of researchers in society, and to cultivate a sense of ethics as researchers.

The following figure shows a model of five-year doctoral program including joint guidance with other programs and research dispatch programs, as well as a model of three-year doctoral program for students who specialize in the structural materials science program.

(1) Curriculum model for five-year doctoral program



(2) Curriculum model for three-year doctoral program



Obtaining a Degree

To obtain a doctoral degree, students must earn the prescribed credits and pass a preliminary examination administered by at least five faculty members not only from the program but also from the relevant field. The doctoral dissertation will be reviewed by an evaluation committee of about six members, including at least three faculty members affiliated with the program. The doctoral dissertation examinations will consist of an oral presentation, a question-and-answer session, and an oral examination by all the members of this review committee. In addition, a public paper presentation will be held after the doctoral dissertation examinations. Upon passing this examination and obtaining the approval of the Representative Committee of Physical Science, the student is awarded the degree of Doctor of Philosophy (Japanese : *Rigaku* 理学 or *Kougaku* 工学 or *Gakujutsuu* 学術).

In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students We Seek

This program seeks students who have basic knowledge of materials science in a broad sense, including life science, and sufficient academic ability in English, and who possess the qualities necessary for conducting advanced research: objectivity, proactivity, and a relentless desire to learn.

Selection of Students for Admission

In selecting applicants for this program, we will make a comprehensive judgment as to whether they are willing to engage in future studies and conduct research with a vigorous and flexible inquisitive spirit, in addition to basic academic skills for specialized education, logical thinking ability, and English ability. For students entering the doctoral program, in addition to their basic academic skills, we will judge their ability to independently pursue future research based on their level of understanding of their previous research.

Global Environmental Studies Program

Program Outline

The Global Environmental Studies Program is based on international research projects promoted by the Research Institute for Humanity and Nature (RIHN). This interdisciplinary research with elements of transdisciplinarity utilizes a problem-solving approach in collaboration with society. The program is designed for students to gain knowledge and methodologies accumulated in the academic fields that constitute Global Environmental Studies and to become independent researchers who will engage in solving global environmental issues with their expertise. The program provides small-group education and research training in an environment conducive for cutting-edge research.

This program offers a three-year doctoral program for students who have obtained a master's degree. Students in this program will study and conduct research at the Research Institute for Humanity and Nature (RIHN) in Kyoto.

Aims for Doctoral Candidates

Students will acquire knowledge and methodologies accumulated in their specialized academic fields within the academic fields that comprise Global Environmental Studies and then apply them to promote advanced research. Students are expected to gain a deep understanding of events and phenomena, take on unexplored challenges based on free inspiration, and aim to create new intellectual value. Students will gain the ability to utilize the diverse research environment at RIHN to disseminate highly universal academic results based on understanding and collaboration that is not limited by country, region, language, culture, gender, religion, and other aspects. To conduct comprehensive research on global environmental issues, which span a wide range of academic fields, students will tackle issues in specific fields from an interdisciplinary perspective while being grounded in their own expertise and acquire a transdisciplinary approach that contributes to the development of a wide range of academic disciplines, including co-creation of knowledge as necessary. Students will recognize the social significance and positioning of the academic research they conduct, act with a sense of ethics and responsibility as researchers, and promote research that contributes to solving global environmental problems.

Learning and Research Activities

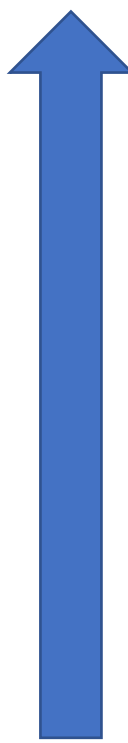
Students will engage in the following study and research activities to acquire the skills necessary to obtain a doctoral degree.

Students begin their doctoral dissertation research under a multiple-supervisor system consisting of one main supervisor and at least one sub-supervisor (Dissertation Work in Advanced Studies IIIA-VB) immediately after admission. Given the breadth of the fields covered by Global Environmental Studies, we have established a tailor-made guidance

system for each student on the paths toward obtaining a doctoral degree. We recommend that students study research examples in Introduction to Global Environmental Studies and research methods in Topics of Global Environmental Studies in their first year. Students can learn about research integrity in transdisciplinary research in Introduction to Transdisciplinary Approach and internationalism in Global Sustainability Seminar. In addition, students will take courses from 20 programs, including this program, according to their own interests and specialties to broaden their knowledge in related fields. Through the experience of using the research opportunities at the Research Institute for Humanity and Nature (RIHN), students can complete highly original doctoral dissertation research from a broad perspective.

Below is a diagram of the course of study toward a degree in Global Environmental Studies program.

Curriculum Model of Global Environmental Studies Program



Doctoral Dissertation Submitted, Doctoral Dissertation Examination and Doctoral Degree Awarded			
Doctoral program 3 rd Year	<u>Dissertation Work in Advanced Studies IVA, IVB, VA, VB (2 each)</u>		<u>Global Environmental Studies Seminar III, IV, V (1 each),</u> <u>Global Sustainability Seminar (1),</u> <u>Introduction to Transdisciplinary Approach (1)</u>
2 nd Year	<ul style="list-style-type: none"> • Surveys and Experiments • Present Research Results • Write Dissertation 		
1 st Year	<u>Dissertation Work in Advanced Studies IIIA, IIIB (2 each)</u>	<u>Introduction to Global Environmental Studies (2),</u> <u>Topics of Global Environmental Studies (2)</u>	
	<ul style="list-style-type: none"> • Plan Research Question and Research Plan • Preliminary Research 		
	Academic Expertise, Creativity	Academic Expertise, Interdisciplinarity	Broad Perspective and Transdisciplinarity, Global Competence, Research integrity
	Research Guidance from Supervisor(s) 【Compulsory】	Subjects within Global Environmental Studies Program 【Elective】	

Note: Numbers in ()s show the number of credits for each subject.

Obtaining a degree

To obtain a doctoral degree, students must earn the prescribed credits and pass the doctoral dissertation review and final examination. After passing the preliminary examination, doctoral dissertations are reviewed by an evaluation committee that includes outside experts (external examiners). In the review process, in addition to submission and peer review of the doctoral dissertation, students are required to deliver an oral presentation and answer questions at a public dissertation presentation organized by the program. After passing this review, the doctoral dissertation must be approved by the Representative Committee composed of representatives from each program. Given the interdisciplinary nature of Global Environmental Studies, doctoral dissertations are reviewed in the basic fields of Cultural and Social Studies, Physical Sciences, and Life Sciences. Upon passing all of these examinations, the student is awarded the degree of Doctor of Philosophy.

For Prospective Students

Type of Students We Seek

The Global Environmental Studies Program seeks students who have a strong interest in research related to Global Environmental Studies, and who have the will and enthusiasm to thrive internationally, constantly honing their rich intellect and sensitivity, aiming for practical research that will open up a new era while taking a comprehensive view of the entire field of study, not limited by existing disciplines.

Selection of Students for Admission

In selecting students for the Program, we place importance on basic academic skills, research planning ability, and logical thinking ability to promote research independently in the field of Global Environmental Studies. To properly judge such abilities, the selection process will focus on research and social experience prior to admission, including research during master's degree programs, the specificity and feasibility of research to be conducted after admission, and the ability to conduct such research.

Polar Science Program

Program Outline

The Polar Science Program aims to nurture outstanding researchers equipped with advanced research capabilities in space and planetary science, solar-terrestrial physics, meteorology, glaciology, atmospheric science, oceanography, geoscience, solid earth science, bioscience, and related fields, to explore universal principles and laws that govern various natural and physical phenomena in the polar regions and high mountains. The program also expects students to elucidate the role of polar regions in the global environmental changes and the earth and planetary systems, as well as the geological and natural history of polar regions.

We offer two programs (curriculums): five-year and three-year doctoral program that accepts bachelor's degree holders and master's degree holders, respectively. Students in the program will conduct their studies and research activities at the National Institute of Polar Research, located in Tachikawa, Tokyo.

Aims for Doctoral Candidates

In the Polar Science Program, students will acquire advanced specialized knowledge in natural sciences and deep knowledge of the role of the polar regions in earth and planetary system. They are expected to conduct original research that contributes to polar science. To achieve this goal, students will equip the following abilities.

1. The ability to acquire the basic system and knowledge of natural science in depth, and to develop them originally
2. Diverse research methods and techniques for setting and solving research themes
3. Techniques for communicating research results to others, both domestically and internationally
4. The ability to create new intellectual value with a broad perspective and flexibility toward interdisciplinary research and with a sense of ethics

Learning and Research Activities

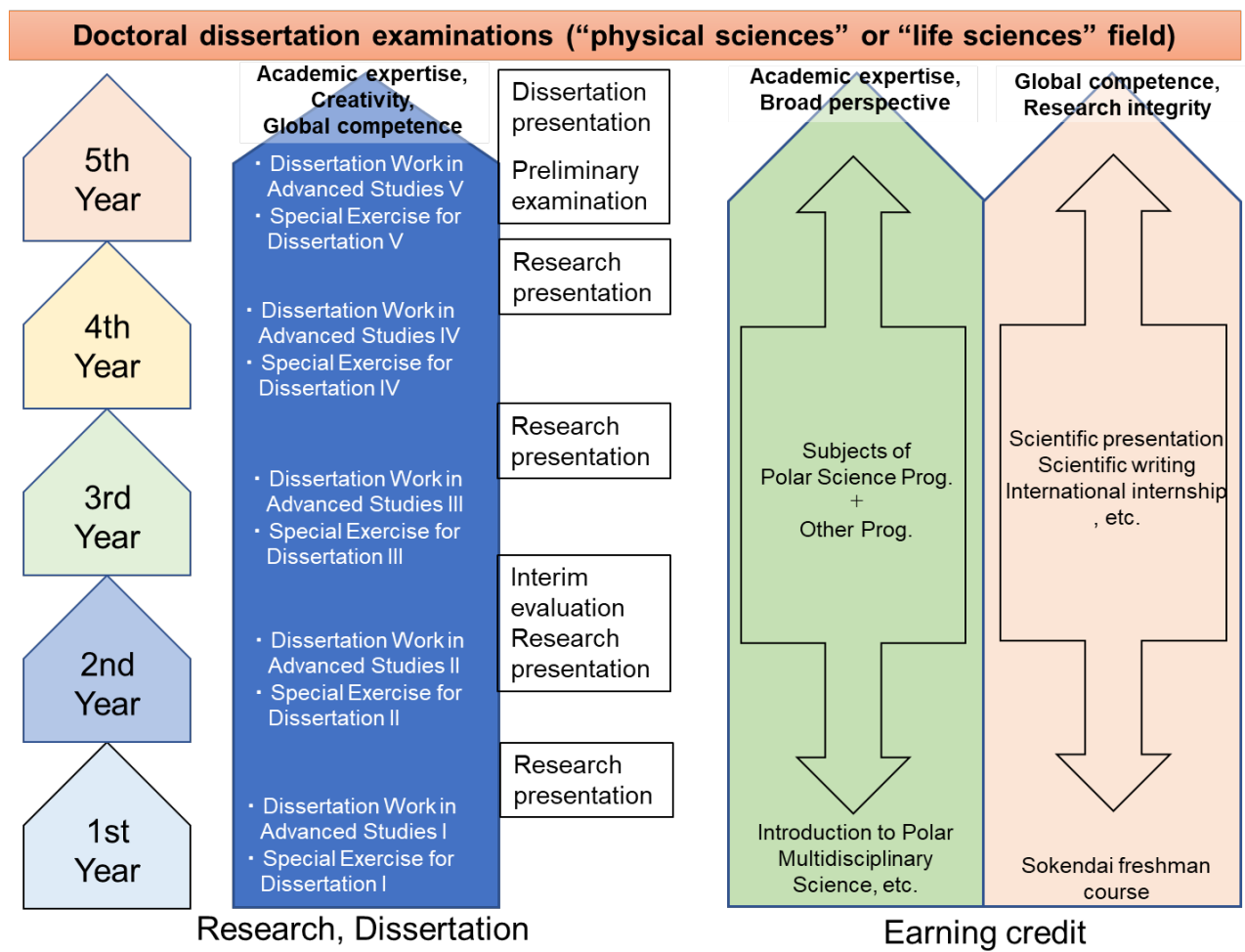
Students will conduct the following academic and research activities to acquire competencies appropriate for the doctoral degree.

1. Through specialized courses on polar science and the earth and planetary systems offered in this program, students acquire basic knowledge and skills in space and planetary science, solar-terrestrial physics, meteorology, glaciology, atmospheric science, oceanography, geoscience, solid earth science, and bioscience. Students can broaden their interdisciplinary perspectives by taking courses in other programs.

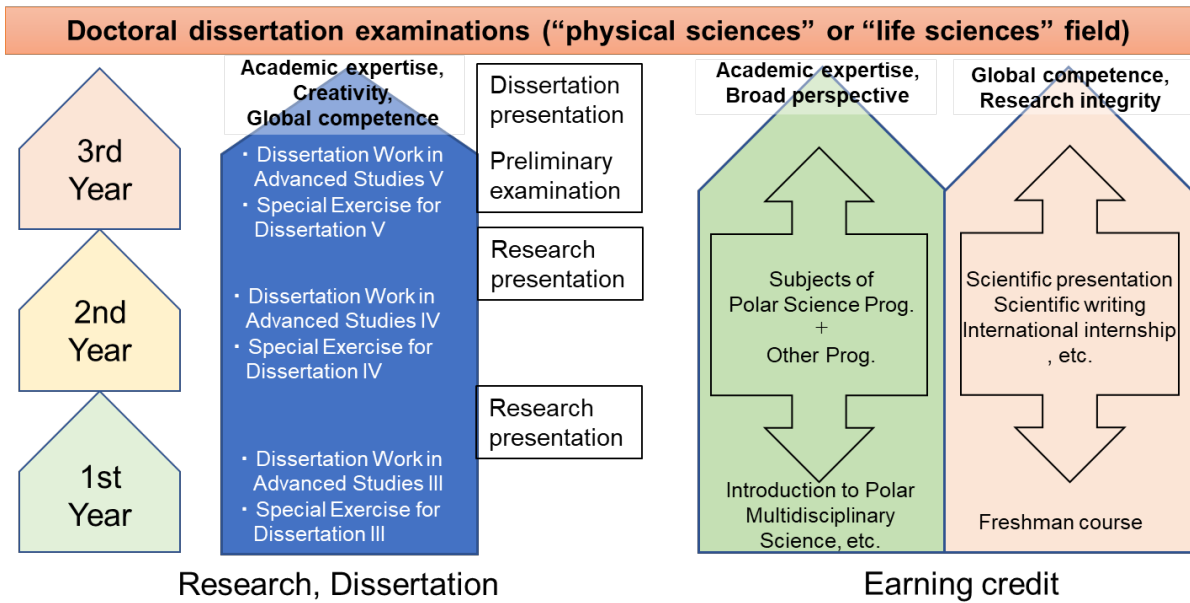
2. Each student is assigned a main supervisor and a sub-supervisor during their doctoral research and in writing their doctoral dissertation through Dissertation Work in Advanced Studies I-V (A, B) and Special Exercise for Dissertation I-V (A, B). Especially in the research fields where fieldwork is conducted, students learn basic attitudes and techniques as field scientists from their supervisors and other instructors. Students may also take advantage of joint instruction with faculty from other programs.
3. Through courses such as the SOKENDAI Freshman Course, students learn the ethics and communication skills necessary for researchers and professionals.
4. Students enrolled in the five-year doctoral program undergo an interim evaluation to support the preparation of their doctoral dissertation after 1.5 years.
5. Students will participate in seminars and research meetings held within the program and annual meeting for research presentations, to deepen their interaction with researchers and acquire the methods and techniques for analysis, collection of information, personal interaction, and presentation and discussion of results, all of which are necessary to carry out research.
6. Through research presentations at domestic and international conferences and research meetings and research exchanges with researchers in various fields, students will develop the ability to disseminate research results appropriately and to play an active role in international and interdisciplinary societies.
7. The program requires at least one academic paper in English to be accepted by an international journal prior to the submission of the doctoral dissertation. After completion of the requirements, students undergo a dissertation review and examination.

The following diagram illustrates models of the course of study for the five-year and three-year doctoral program.

(1) Curriculum model of Polar Science Program (for five-year doctoral program)



(2) Curriculum model of Polar Science Program (for three-year doctoral program)



Obtaining a Degree

To obtain a degree, students must be enrolled for at least five years in the case of the five-year doctoral program or three years in the case of the three-year doctoral program. Students must also obtain the designated credits, receive the necessary research guidance, and submit their doctoral dissertation. To submit a doctoral dissertation, students must have at least one academic paper in English containing the content of the dissertation be accepted by an international journal. The doctoral dissertation is reviewed by the program committee after an oral presentation, defense, and academic examination at an open dissertation presentation, and then is further reviewed in the Physical Science or Life Science field depending on the specialization of the research. Students who pass the reviews and examination are awarded the degree of Doctor of Philosophy (*Rigaku* or *Gakujutsu* in Japanese). In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students We Seek

We seek highly motivated students who have a strong interest in natural phenomena in the polar regions and who can confront the issues they wish to elucidate through theoretical, observational, and experimental research. We accept applications from researchers in all disciplines based on natural sciences.

Selection of Students for Admission

To select students for the five-year doctoral program, we comprehensively evaluate, through a written examination, document screening, and an interview, the applicants' ability to think and write logically and expressively, English proficiency, basic academic skills in their field of specialization, research motivation and competence, research plans, and future prospects toward obtaining a degree. We will comprehensively judge their academic ability and logical thinking ability to independently promote polar science research and obtain a doctoral degree, including the logicity of their descriptions and arguments, originality of their research plan, and potential for future development, by screening their documents and conducting interviews.

Basic Biology Program

Program Outline

At the National Institutes for Basic Biology, the parent institute for the Basic Biology Program, we conduct research aimed at elucidating the common and fundamental mechanisms that underlie all living organisms, that contribute to biological diversity, and that enable organisms to adapt to their environment. The Basic Biology Program seeks to cultivate researchers capable of identifying fundamental and pressing question in the biological science through research activities and coursework.

This program offers both a five-year and a three-year doctoral program for students with a bachelor's degree and a master's degree, respectively. Students primarily conduct their academic studies and research activities at the National Institute for Basic Biology, located in Okazaki, Aichi Prefecture.

Aims for Doctoral Candidates

The Basic Biology program aims to cultivate doctoral researchers equipped with the following competencies essential for conducting independent research:

- Possessing systematic and state-of-the-art knowledge in their specialized field, along with a comprehensive understanding of the overarching principles of basic biology.
- Capable of envisioning the future trajectory of research by drawing from a wide-ranging perspective encompassing their specialized field and related domains, and identifying significant, unresolved questions.
- Equipped with the ability to develop innovative yet feasible research plans, coupled with the technical and analytical skills necessary to execute them.
- Demonstrating advanced communication skills to effectively disseminate research findings both nationally and internationally, thereby contributing to the advancement of basic biology.
- Exhibiting awareness of the importance and positioning of academic research, and acting responsibly in their role as researchers.

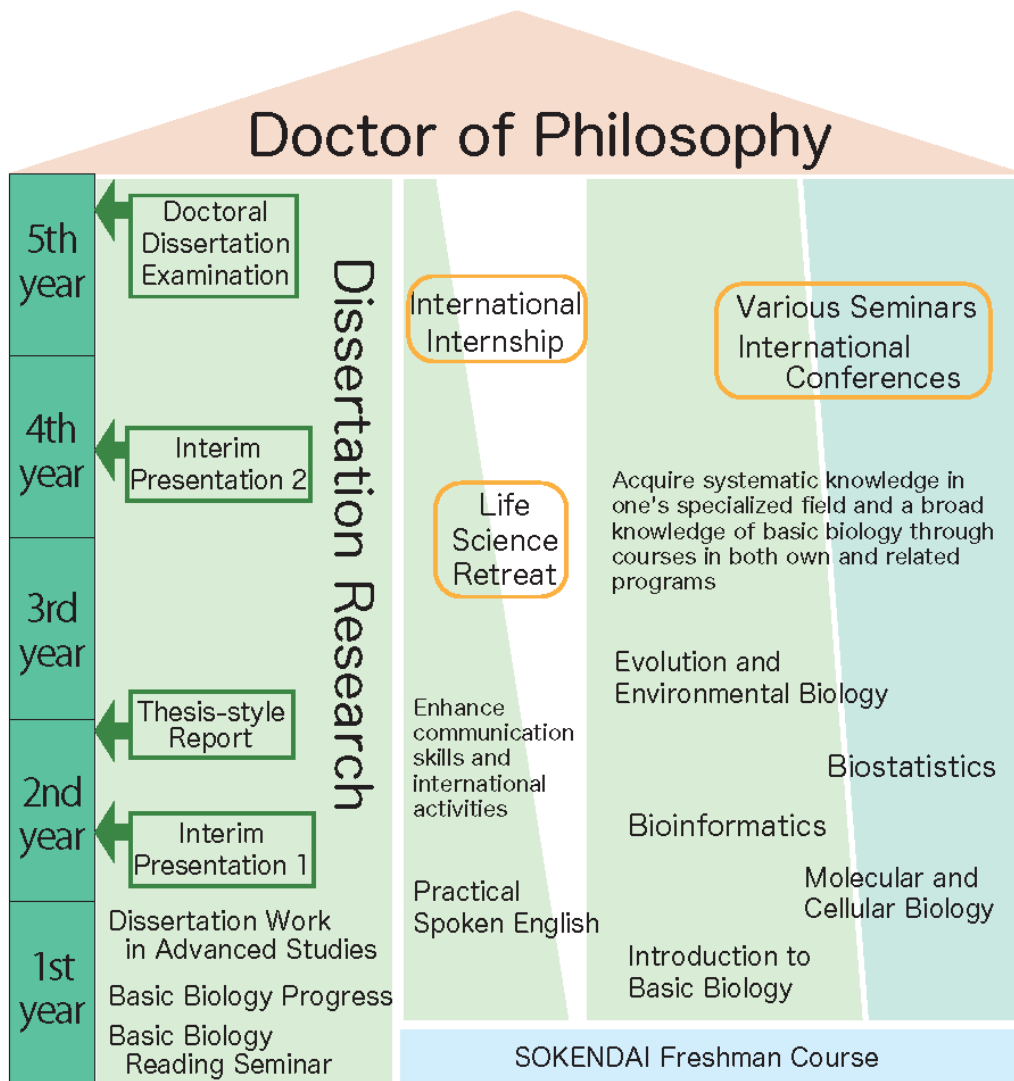
Learning and Research Activities

Students in this program engage in various academic and research activities aimed at equipping them with the skills and competencies necessary for earning a doctoral degree.

- Through the SOKENDAI Freshman Course, students gain exposure to a wide range of research fields spanning 20 programs, while nurturing essential research ethics and communication skills.

- By enrolling in courses in the Basic Biology Program and related areas (e.g., Introduction to Basic Biology 1 & 2, Molecular and Cellular Biology 1 & 2), students acquire both specialized and comprehensive knowledge in basic biology.
- Under the guidance and cooperation of their advisors, students independently choose a research topic, formulate a plan, execute the research, and prepare research papers on their initiative, thereby gaining practical research skills (Dissertation Work in Advanced Studies IA–VB).
- Students utilize opportunities to receive advice not only within their research groups but also from faculty members in different specialties, thus fostering a multidisciplinary approach to research (e.g., Basic Biology Progress IA–VB).
- In the second semester of their second year, students in the five-year doctoral program prepare a thesis-style report that summarizes their research findings, serving as a practical exercise in scientific writing (Basic Biology Progress IIB).
- Practical courses in English presentations and scientific writing (e.g., Practical Spoken English 1–10), in addition to opportunities for research presentations both within and outside their program (e.g., Life Science Retreat I–V), help students hone their abilities to effectively communicate their research findings.
- Participation in various seminars and international symposiums hosted by SOKENDAI and the National Institute for Basic Biology allows students to acquire cutting-edge knowledge and practical communication skills essential for research (e.g., Advanced Conference 1–5, Basic Biology Seminar I–V).
- Through programs that support overseas research and presentations, such as the SOKENDAI Student Dispatch Program and International Internships, students can develop the skills necessary for international collaboration.

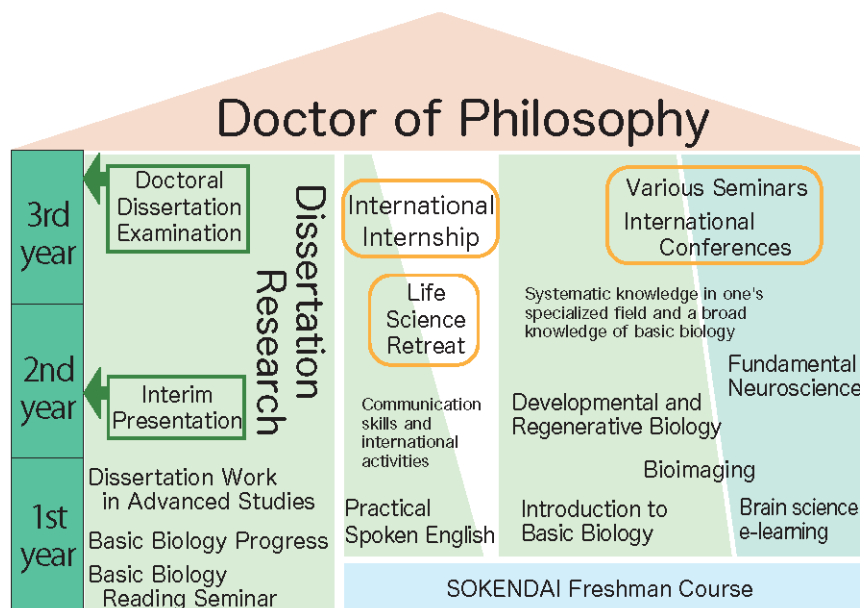
Basic Biology Program Course Model (five-year doctoral program)



Above is an example of students who enrolled in April.

For students who enrolled in October, Interim Presentations 1 and 2 will be made in the second half of the first year and the second half of the third year, respectively.

Basic Biology Program Course Model (three-year doctoral program)



Above is an example of students who enrolled in April.
For students who enrolled in October, the Interim Presentation will be made in the second half of the first year.

Obtaining a Degree

To earn a doctoral degree, students must obtain a specified number of credits and successfully pass the doctoral dissertation examination. The dissertation must contain fundamentally new and advanced research findings, a significant portion of which must be published in peer-reviewed international journals.

The dissertation is initially reviewed by an evaluation committee, including external reviewers, followed by a public oral presentation that is judged by the program committee. Final approval from the Representative Committee of Life Science comprising representatives from multiple programs grants students the Doctor of Philosophy (Japanese: *Rigaku* 理学 or *Gakujutsu* 学術).

In the five-year doctoral program, a master's degree can also be earned under certain conditions.

For Prospective Students

Type of Students We Seek

We seek students who are captivated by biological phenomena and are eager to explore the underlying mechanisms and contributing factors of these phenomena.

Selection of Students for Admission

Admission is based on application documents and interviews conducted by the faculty. These interviews assess the candidates' motivation for academic study, basic knowledge, and suitability for a research career. Additionally, for applicants to the five-year doctoral program, a short essay and written English examination are used to assess their ability to think logically and their basic proficiency in English.

Physiological Sciences Program

Program Outline

Physiological science is a field of study that elucidates the functions and mechanisms of the body. It not only contributes to the development of life science but also provides scientific guidelines for people to lead healthy and fulfilling lives and information that is fundamental to understanding the mechanisms of disease. The Physiological Science Program aims to contribute to the accumulation of new knowledge in the life sciences by working to elucidate issues in the field of physiological science related to the role of the brain and nervous system and biological homeostasis, and to produce researchers and specialists with the foresight to pioneer this field.

This program is offered as a five-year doctoral program accepting bachelor's degree holders or a three-year doctoral program accepting master's degree holders. Students in this program will conduct their studies and research activities at the National Institute for Physiological Sciences (NIPS) in Okazaki, Aichi Prefecture.

Aims for Doctoral Candidates

This program aims to develop graduates who have acquired the following abilities required to be active as physiological science researchers or specialists.

1. The ability to acquire basic knowledge and advanced expertise in physiological sciences and to solve problems based on this knowledge.
2. Deep intellect, rich sensibility, and the willingness and foresight to explore new fields based on a broad perspective that encompasses the physiological science of the brain, nervous system, and homeostasis, as well as life sciences in general.
3. The ability to evaluate one's own research in relation to society based on a high level of ethics and a strong sense of responsibility.
4. Internationality in disseminating research findings to the world and, when necessary, collaborating with international researchers to solve problems.

Learning and Research Activities

Students in this program will engage in the following academic and research activities to obtain the doctoral degree.

<The Five-year doctoral program>

In addition to specialized knowledge in the field of physiological science, students will acquire basic knowledge of the brain, nervous system, and biological homeostasis necessary for research, as well as a wide range of knowledge and research methods in life science-related fields through courses. Students will improve their English language skills in the Practical Spoken English and enhance their communication and

presentation skills, which are important for researchers, by participating in the Life Science Retreat and deepening exchanges with students from other programs.

Concurrently, students will engage in research in the laboratory to which they are assigned. Students determine their research projects through discussions with their supervisors, investigate backgrounds to better understand the significance of their research, and conduct their research. In the process, they acquire research data while learning correct experimental techniques, logical thinking, ways to overcome problems through trial and error, and the ethics required for research. In addition to receiving daily research guidance in their laboratories, students report the progress of their research to faculty members outside their laboratories twice each year in the Physiological Science Progress. In the second and fourth years, students will present their research results at the program-wide presentation meetings, where they will acquire the ability to present and discuss their research results. Students also receive advice from a broad perspective, which they can apply to their research. To advance to the third year, students must compile their research progress in the second year into a thesis-style report for review. In the dissertation seminar held in their laboratory, students learn how to structure and summarize their dissertation while learning the latest research findings in related fields. Under the guidance of their supervisor, students write their doctoral dissertations based on the data obtained in their research.

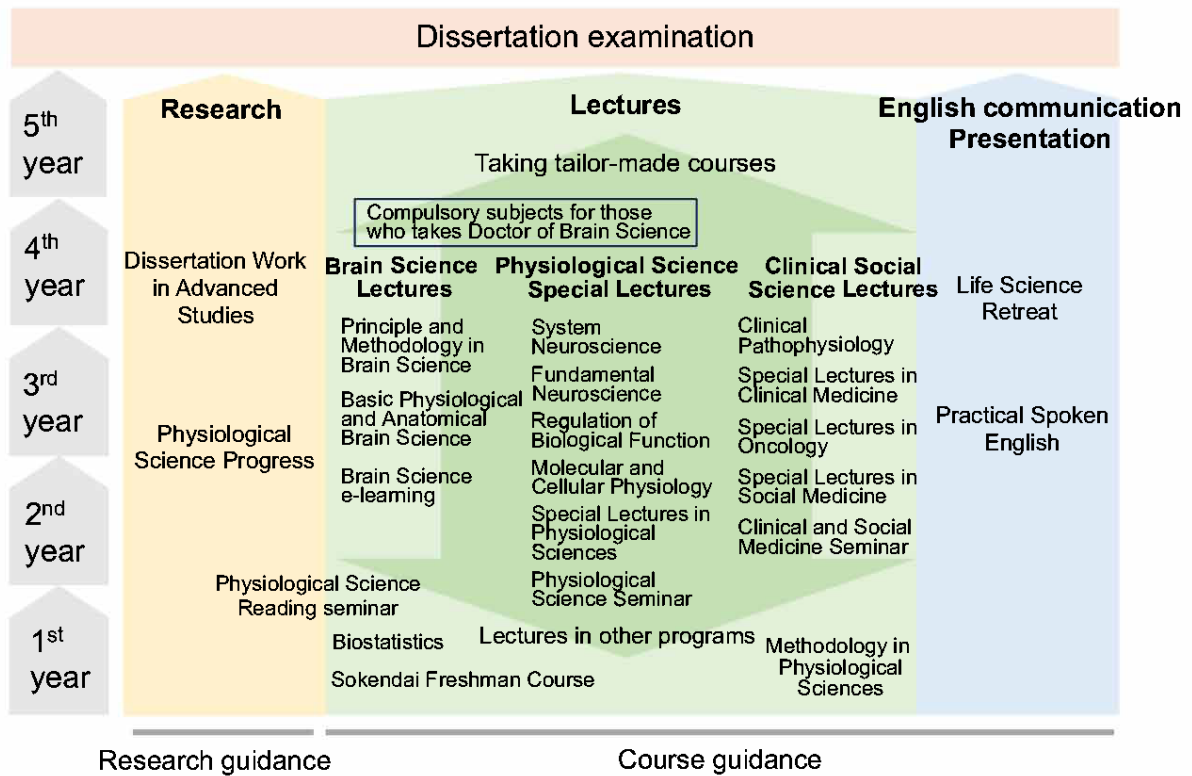
<The Three-year doctoral program>

In addition to the expertise acquired up to the master's level, students will acquire expertise in physiological science, knowledge of neuroscience, and a wide range of knowledge and research methods in life science-related fields through courses as needed. Students will improve their English language skills in the Practical Spoken English and enhance their communication and presentation skills, which are important for researchers, by participating in the Life Science Retreat and deepening exchanges with students from other programs.

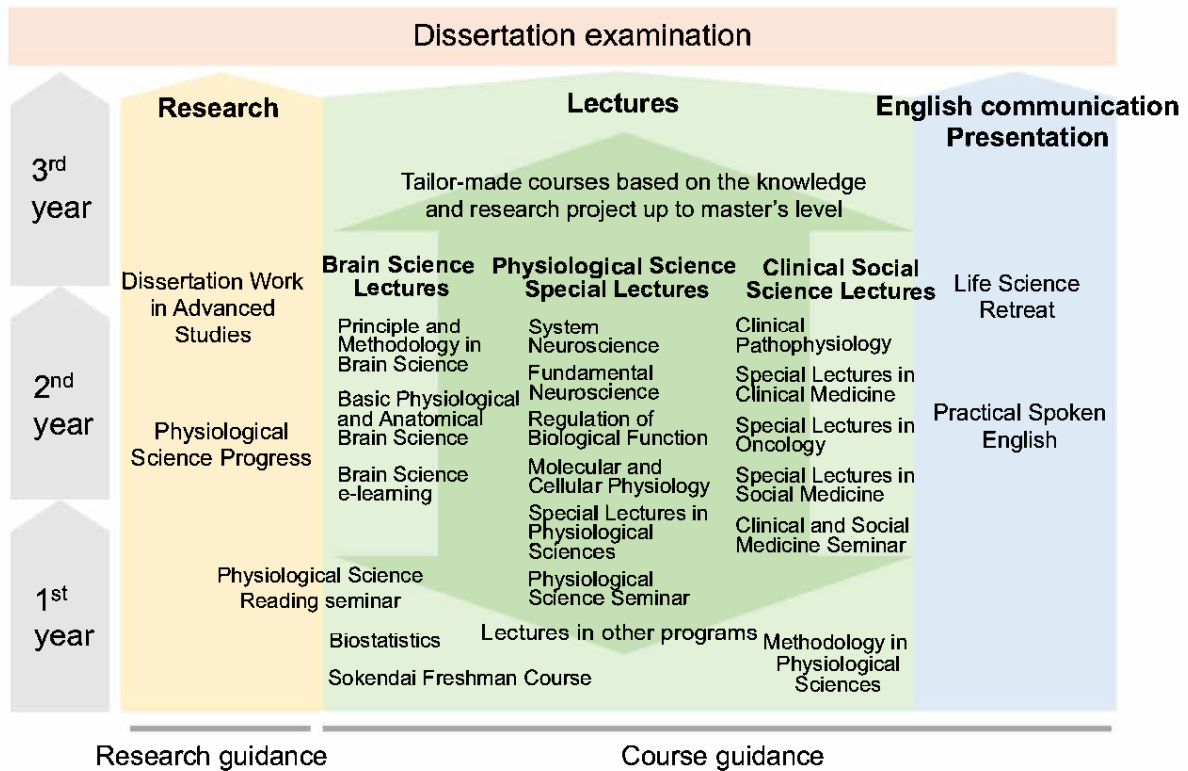
Students determine their research topics through discussions with their supervisors, taking into consideration their expertise up to the master's level. In conducting research, students acquire research data while further learning correct experimental techniques, logical thinking, methods for overcoming problems, and the ethics required for research. In addition to receiving daily research guidance in their laboratories, students report on the progress of their research to faculty members outside their laboratories twice a year at the Physiological Science Progress. In their second year, they deliver research presentations to all students and faculty members in the program to obtain advice from a broad perspective and apply it to their research. Under the guidance of their supervisors, students write their doctoral dissertations based on their research data.

Physiological Sciences Program

5-year doctoral program



Physiological Sciences Program 3-year doctoral program



Obtaining a Degree

To obtain a doctoral degree, students must earn the prescribed credits, submit a doctoral dissertation, and pass the doctoral dissertation examination. The doctoral dissertation must be based primarily on content submitted to an English-language academic journal with an established peer-review system. The doctoral dissertation will be reviewed by the Evaluation Committee, including external examiners affiliated with other institutions, and will include a review of the dissertation, an oral presentation and question-and-answer session at a public presentation, and an oral examination.

Upon passing these examinations, students are awarded the degree of Doctor of Philosophy (Japanese: *Gakujutsu* 学術 or *Rigaku* 理学 or *Noukagaku* 脳科学 or *Igaku* 医学).

In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students We Seek

- Those who have a strong interest in the field of physiological science, i.e., the workings of the body, including the brain, nervous system, and homeostasis, and who

are willing to take on the challenge of elucidating the mechanisms of the body's functions.

- Those who have the basic academic skills, logical thinking and ethics necessary to conduct research.

Selection of Students for Admission

In selecting applicants, we place importance on the basic academic skills and logical thinking ability to independently promote research in the advanced academic fields promoted by the Physiological Science Program. English proficiency is also taken into consideration. To properly judge such abilities, we will administer a written test and interview to applicants for the five-year doctoral program, and an interview to applicants for the three-year doctoral program. Applicants will be required to submit scores from private English language certification tests.

Genetics Program

Program Outline

The Genetics Program fosters researchers who have deep insight and knowledge of the field of life sciences and can foresee future research.

This program consists of two programs: a five-year doctoral program and a three-year doctoral program. Students in this program will conduct their research activities primarily at the National Institute of Genetics in Mishima, Shizuoka Prefecture.

Aims for Doctoral Candidates

This program trains graduates who meet the following requirements;

- Have advanced research skills to produce novel original research results that contribute to the advancement of the field of life sciences.
- Can contribute to the development of a wide range of academic disciplines, taking a broader view of the surrounding area of genetics.
- Can understand, discuss, and express science in English to achieve global research.
- Can act with a sense of ethics and responsibility as a researcher.

Learning and Research Activities

Students cultivate advanced research skills through research guidance courses. In Dissertation Work in Advanced Studies IA–VB, students conduct and complete their doctoral dissertation research under the close guidance of their main supervisor. In Genetics Progress IA–VB, a Progress Committee is organized for each student, consisting of faculty members other than the main supervisor; the committee provides guidance and advice in line with the roadmap for researcher development. In Genetics Reading Seminar IA–VB, students are exposed to cutting-edge research being conducted in the field through a research activity called Journal Club, and develop the ability to think as a researcher.

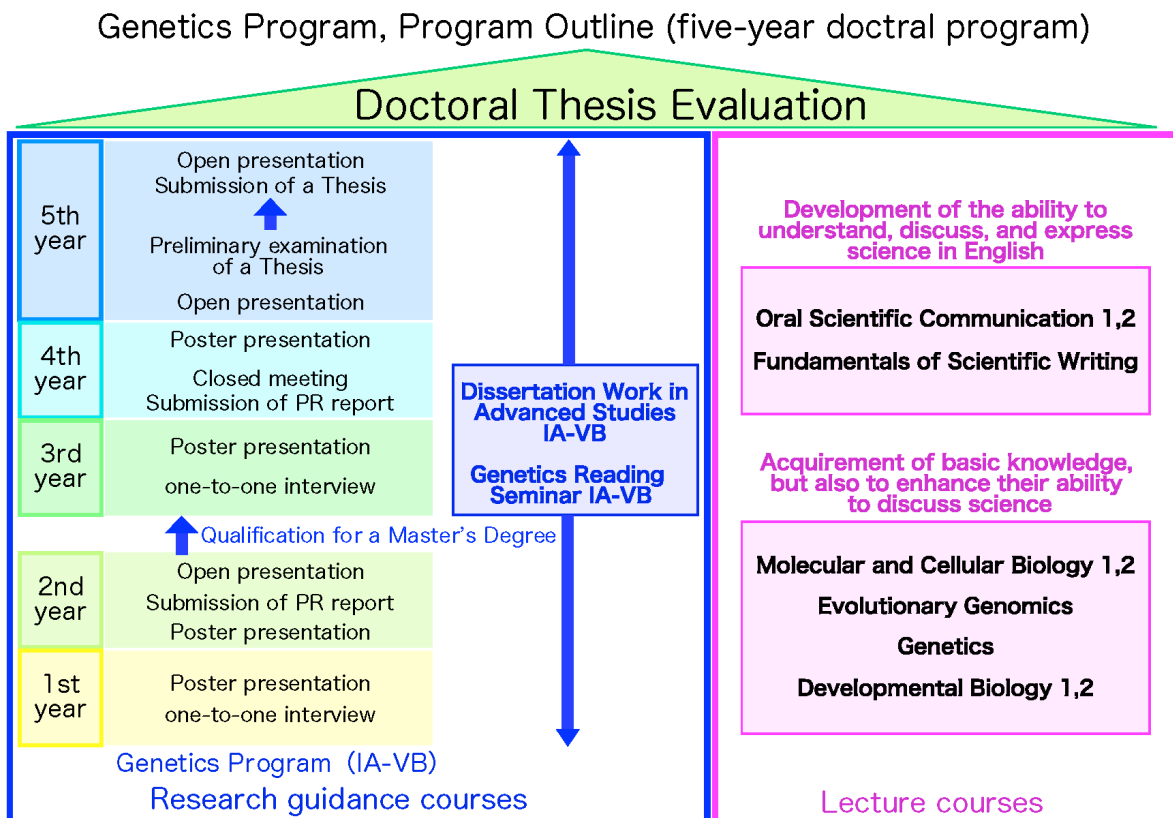
Students will acquire the basic knowledge through lecture courses; Molecular and Cellular Biology 1 and 2, Evolutionary Genomics, and Genetics. These courses are designed to be taken in two consecutive years. Developmental Biology 1 and 2, which are discussion-based courses, are designed to help students not only acquire basic knowledge but also enhance their ability to discuss science. Through hands-on lectures in Oral Scientific Communication 1 and 2 and Fundamentals of Scientific Writing, students will develop the ability to understand, discuss, and express science in English.

Students learn about research ethics practically, through research guidance from their main supervisor and by attending annual research ethics seminars.

In addition to the lecture courses mentioned above, students are encouraged to take many cross-program elective courses using the distance lecture system to acquire broad knowledge and a bird's-eye view across disciplines.

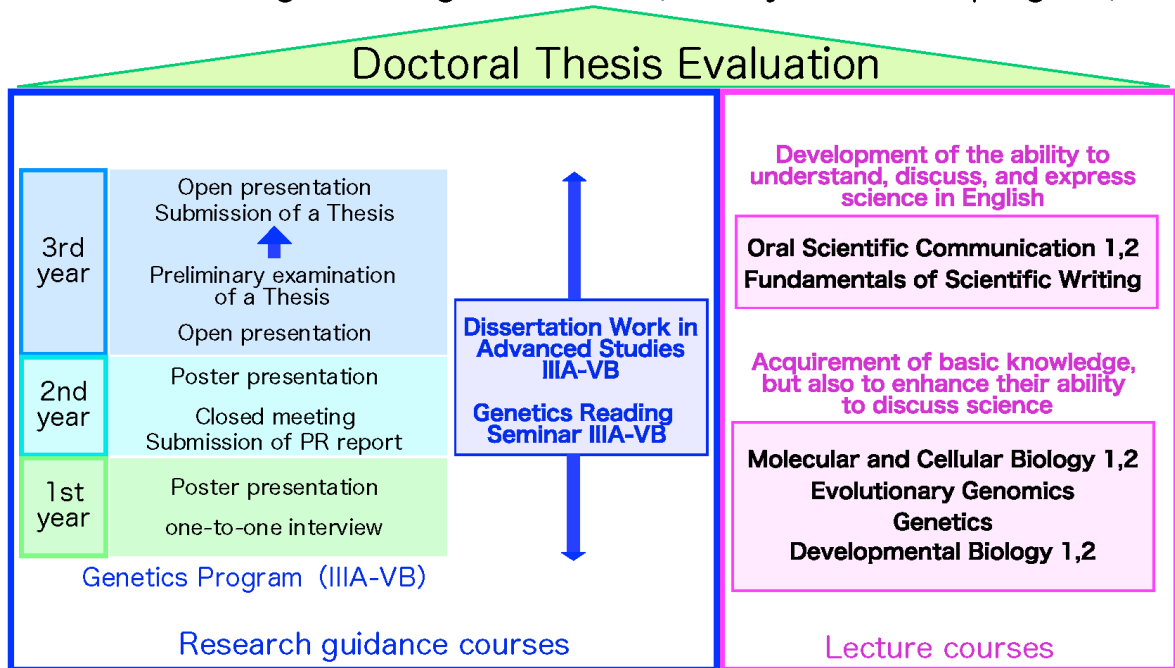
The following diagram illustrates a study model for the five-year doctoral program and the three-year doctoral program.

Curriculum Model of Genetics Program (for five-year doctoral program)



Curriculum Model of Genetics Program (for three-year doctoral program)

Genetics Program, Program Outline (three-year doctoral program)



Obtaining a Degree

In the Genetics Program, a doctorate degree is awarded based on the assessment of the student's ability as an independent researcher. In addition to earning the designated subject credits, students are required to submit a doctoral dissertation and then deliver an oral presentation and answer questions at a public dissertation presentation for the degree certification examination. In this process, we evaluate whether the dissertation reports original research that contributes to the advancement of the life science field. The content of the dissertation research must include the content of a paper already accepted in a peer-reviewed journal, or maintain the equivalent quality. In the degree certification examination, we assess whether students have "deep insight into the field," "ability to understand, discuss, and express in English," "rich conceptual ability to see the future of research," and "high ethical standards as a researcher". Upon passing the doctoral dissertation examinations, students are awarded the degree of Doctor of Philosophy (Japanese: *Rigaku* 理学 or *Gakujutsu* 学術).

The doctoral dissertation examinations are conducted mainly in the Life Sciences field, but depending on the specialty of the research, examinations may be conducted in other fields. In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students We Seek

This program seeks students who have a strong interest and desire to pursue research in Life Sciences, have the potential to become independent researchers, and strive to do so through the academic experience in this program.

Selection of Students for Admission

We consider the following factors when selecting students for admission.

- We place importance not only on the applicant's knowledge but also on their motivation for basic research, logical thinking, and creativity. Applicants must also possess the academic skills in English that are essential for conducting research.
- For each prospective student, ample time is spent for the interviews and written exams. All the faculty members belonging to the program evaluate the student's aptitude and potential as a researcher.
- We use a selection system that can accept a diverse range of students, including international students, transfer students and students entering from the working force.

Integrative Evolutionary Science Program

Program Outline

Integrative Evolutionary Science is a new academic field that aims not only for the development of biology but also for elucidating the nature of human beings and solving social issues, through a comprehensive understanding of the change of living organisms, transition of human activities, and progression of global issues from an evolutionary perspective. The Integrative Evolutionary Science Program, in collaboration with the Research Center for Integrative Evolutionary Science, aims to pursue and share truths with society, produce future leaders in this field, and to contribute broadly to the development of science and society. Students in this program will conduct their studies and research activities at the Research Center for Integrative Evolutionary Science, located in Hayama, Kanagawa Prefecture.

This program consists of two programs: a five-year doctoral program for students with a bachelor's degree and a three-year doctoral program for students with a master's degree.

Aims for Doctoral Candidates

This program aims to nurture the following graduates who can play an active role in society in the next generation through their expertise in integrative evolutionary science.

- Students with outstanding expertise and ability to lead world-class research in the future in either evolutionary biology or science and society.
- Students who can discover new issues and methodologies on their own, by applying the knowledge of integrative evolutionary science, and who can pioneer an academic field outside the existing frameworks.
- Students with a broad perspective on scientific research and can consider the nature of science and its role in society from a comprehensive viewpoint.
- Students with high communication skills, including English proficiency, and who can play an active role on the international stage.

Learning and Research Activities

Students in this program will conduct the following academic and research activities to acquire competencies appropriate for the doctoral degree.

(Five-year doctoral program)

1. Through the SOKENDAI Freshman Course, students will develop research ethics and communication skills essential for researchers and professionals.

2. Students will acquire basic knowledge and skills in biology through the following courses: Micro- and Macro-scopic Biology, Integrative Evolutionary Biology, Laboratory of Basic Biology, and Biostatistics.
3. Students will acquire the ability to deeply consider the nature of science and the relationship between science and society through the following courses: Introduction to Philosophy of Science, Science, Technology and Society, and Life Science & Society.
4. In the first year, students participate in laboratory rotations (Dissertation Work in Advanced Studies IA and IB). Students will have about one month of research experience in each of the laboratories they choose, where they will be exposed to a wide range of academic fields and determine the theme of their doctoral dissertation research.
5. By the second semester of the first year, students will begin their doctoral dissertation research under a multiple-supervisor system that consists of one main supervisor and two or more sub-supervisor (Dissertation Work in Advanced Studies IB-VB). At the semi-annual Integrative Evolutionary Science Progress Report, students present the progress of their research and receive advices from faculty members and their supervisors. Through these activities, students can complete highly original doctoral dissertation research from a broad perspective.
6. Students will learn cutting-edge knowledge in the fields of biology and science and society and acquire a high level of expertise through the following advanced courses: Introduction to Science and Technology Studies, STS and History of Science 1-3, and Integrative Evolutionary Science Special Seminar Series.
7. Students will expand their knowledge of related fields by taking subjects from 19 other programs according to their own interests and specialties.
8. Students will improve their communication skills, including English proficiency, through the following courses: Integrative Evolutionary Science Academic English (Basic/Advance), Life Science Retreat, and Integrative Evolutionary Science Progress Report.
9. Students must submit a sub-thesis as a requirement for the dissertation. Students will first learn how to proceed with the writing of their sub-thesis in Introduction to the Science & Society Sub-thesis or Introduction to the Biological Science Sub-thesis. In the actual writing of the sub-thesis, students in the field of biology will be guided by faculty members in science and society, and students in the field of science and society will be guided by faculty members in biology.

(Three-year doctoral program)

1. Through the SOKENDAI Freshman Course, students will develop research ethics and communication skills essential for researchers and professionals.
2. Students will acquire basic knowledge and skills in biology through courses such as Laboratory of Basic Biology.

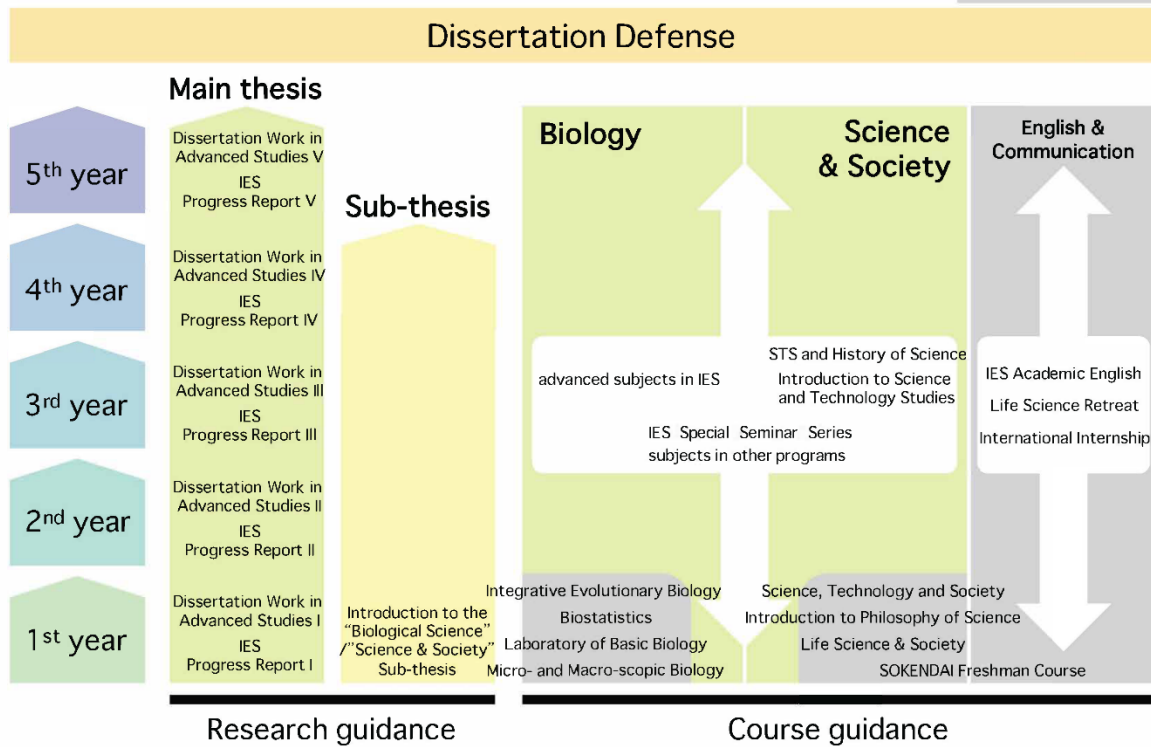
3. Through courses such as Science, Technology and Society, students will acquire the ability to deeply consider the nature of science and the relation between science and society.
4. Immediately after enrollment, students begin their doctoral dissertation research under a multiple-supervisor system that consists of one main supervisor and two or more sub-supervisors (Dissertation Work on Advanced Studies IIIA-VB). At the semi-annual Integrative Evolutionary Science Progress Report, students present the progress of their research and receive advice from faculty members and their supervisors. Through these activities, students can complete highly original doctoral dissertation research with a broad perspective.
5. Students will expand their knowledge of related fields by taking courses from 20 programs, according to their own interests and specialties.
6. Students will improve their communication skills, including English proficiency through the following courses: Integrative Evolutionary Science Academic English (Basic/Advance), Life Science Retreat, and Integrative Evolutionary Science Progress Report.
7. Student must submit a sub-thesis as a requirement for the dissertation. Students will first learn how to proceed with the writing of their sub-thesis in Introduction to Science & Society Sub-thesis or Introduction to the Biological Science Sub-thesis. In the actual writing of the sub-thesis, students in the field of biology will be guided by faculty members in science and society, and students in the field of science and society will be guided by faculty members in biology.

The following diagram shows a sample course of study. Students can choose a combination of various subjects according to their interests and specialties while preparing their main thesis (doctoral dissertation) and sub-thesis.

Integrative Evolutionary Science(IES): Course overview (5-year)

For expertise

For basic skills

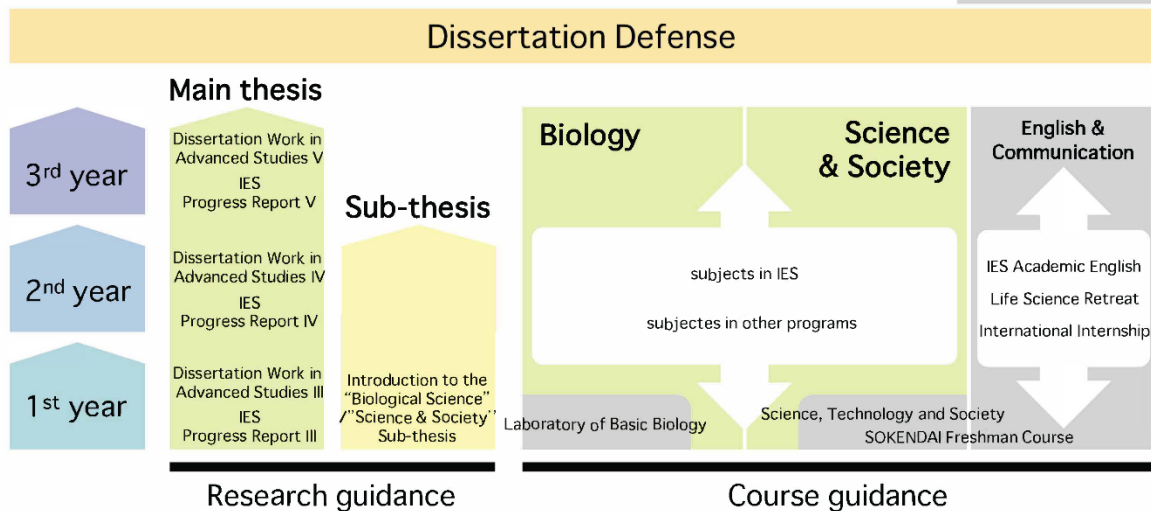


ver. 2023.09.09

Integrative Evolutionary Science(IES): Course overview (3-year)

For expertise

For basic skills



ver. 2023.09.09

Obtaining a Degree

To obtain a doctoral degree, students must earn the prescribed credits and pass the examination of their sub-thesis. The research comprising the doctoral dissertation must be published in an academic journal with an established peer-review system or equivalent. The students must be the first author of at least one paper.

The doctoral dissertation is first reviewed by the program evaluation committee, which includes an external examiner. This examination includes an oral presentation and a question-and-answer session at a public thesis presentation and an oral examination. Upon passing this examination and obtaining approval from the Representative Committee (Life Sciences field or Cultural and Social Studies field), the student is awarded the degree of Doctor of Philosophy (in Japanese :*Rigaku* 理学 or *Gakujutsu* 学術).

In the five-year doctoral program, students can obtain a master's degree if certain conditions are satisfied.

For Prospective Students

Type of Students We Seek

- Students who are willing to explore life phenomena, from molecules to ecosystems, broadly and in depth from an evolutionary perspective.
- Students who are willing to explore science and its relationship with society broadly and in depth.
- Students who aim to be an active researcher or highly skilled professional with an international perspective.
- Students who have a wide range of interests beyond their specialized area, in addition to basic academic skills in their own field.

Selection of Students for Admission

The screening will be carried out based on a comprehensive evaluation of the applicant's basic knowledge of the field they wish to pursue in this program, as well as their ability to think logically, willingness to conduct research, communication skills (including English), and aptitude as a researcher, based on the application documents and interview.

In addition to the above, the specificity and feasibility of the research to be conducted after admission and the ability to carry it out will also be evaluated for applicants to the three-year doctoral program.

S O K E N D A I

