

Guide to the Course-by-Course Education Program in Physical Sciences for AY2021

April, 2021

The Course-by-Course Education Program (hereafter called “the Program”) is provided jointly by the School of Physical Sciences and the School of High Energy Accelerator Science. It seeks to foster researchers in the field of physical sciences who are fully equipped with a high level of expertise as well as broad perspective and international competence, to meet the needs of society.

This program aims at strengthening the university’s curriculum in the physical sciences, and fostering researchers in physics with a broad perspective who possess general ability, expertise, and planning, development and global skills.

Students who wish it are placed according to their aptitude into one of the following four courses: Advanced Research Course, Project Research Course (available only in the School of Physical Sciences), Development Research Course (available only in the School of Physical Sciences), and Basic Course. The education provided reflects the respective goals of the course.

Advanced
Research Course

Project Research
Course

Development
Research Course

Basic Course

*Project Research Course and Development Research Course are available only in the School of Physical Sciences

*For newly enrolled students in or after 2018, though basic course cannot be selected / completed, course subject registration (credit acquisition) is available.

I Comprehensive graduate-level basic education in the 1st and 2nd years of the 5-year doctoral course

The 1st and 2nd years of the 5-year doctoral course has "Comprehensive Subjects" (e.g. Freshman Course) and "Common Specialized Basic Subjects" that offer lectures on basic physical sciences related to specialized fields specific to individual majors. "Special Study on Physical Sciences," which can be taken during the 1st and 2nd years of the 5-year doctoral course, have a laboratory rotation system that allows students to participate in actual research, for about one month in each lab. The broad perspective and strong expertise in physical sciences that students gain from this basic education prepares them for the course-specific education they choose for the 3rd through 5th years of their 5-year doctoral course.

For more information about Special Research in Physical Sciences (Lab Rotation), please refer to the following URL;

https://www.soken.ac.jp/outline/education/interdep_program/course_by_course/lab_rotation/

Students in the 5-year doctoral program are required to acquire the number of credits specified for each major from the Special Research in Physical Sciences and the Common Specialized Basic Subjects of Physical Sciences or the Common Specialized Subjects of High Energy Accelerator Science. For details, please refer to the attached "Course-based Education Program in Physical Sciences Subject List and Curriculum".

Flow for the Course-by-Course Education Program in Physical Sciences



II Course selection

From April of the 3rd year for students in the 5-year doctoral course, and from April in the 4th year for students in the 3-year doctoral course, interested students select and apply to their choice of one of the following four courses. At that time, students should also submit their Course Registration paper (Rishu-Todoke) for the subjects corresponding to their chosen course.

○ New Course Applications

Students who wish to choose a course newly should submit the following documents to the Department Office;

- (Form 1) Application for Course Subject
- Subject Registration (for course completion)

III About each courses

i Advanced Research Course

In the Advanced Research Course, we aim at producing exceptional and world-class researchers in the field of respective doctoral studies.

Required Subjects

- Seminar on Advanced Physical Science Research (4 credits)
- Exercise on Advanced Physical Science Research (4 credits)

Credit Approval

If you wish to apply for credit, please submit the following documents to the department office.

Forms to Submit

- (Form 4-1) Travel Report
- (Form 4-3) Internship Certificate
 - It is not necessary to follow this form if the same information is written.
- “Internship Explanation” written by student’s supervisor
 - You should submit it if the total number of internship days is less than 90.

When requesting credit approval following an internship, students should select “1. I am applying for the credit accreditation as I have completed the internships.” when submitting their Travel Report. If the designated number of days has been satisfied by the internship, the supervisor will submit a report and the department will approve the credits. If the designated number of days has not been satisfied by the internship, the Program Committee will verify that the internship produced enough results to confer credits based on the "Internship Explanation" received from the student's supervisor. The Program Committee will also verify all the student's travel reports using "Form 4-1 Travel Report" and determine whether the requirements for credit approval have been satisfied. If so, the Program Committee will then approve the credits.

Course Completion Approval

[Course Completion Criteria]

In addition to the standard requirements for degree conferment in each department, students are required to submit one international academic research paper (paper under submission is acceptable) and make one presentation at an international conference. Students will also undertake an internship (3-to-12 months) in an overseas research lab directed by a leading researcher in the field and submit a written report of their activities and results.

Regarding program completion, the Program Committee will evaluate the results of the internship in view of the goals of the course.

In principle, the internship at an overseas research lab must be at least three months (90 days).

Internship(s) may include expenses from sources other than the Program.

In the event of unavoidable and unexpected circumstances, stays under three months (90 days) will be accommodated to the extent possible. In such a case, an explanation from the student's supervisor will be required, by submitting "(Form 4-3) Internship Certificate," to show that the results of the internship were enough.

Under no circumstances will approval be given for stays under 1.5 months (45 days).

If you wish to apply for course completion, please submit the following documents to the department office.

Forms to Submit

- (Form 8-1) Course Completion Report (For all students)
- (Form 8-2) Course Completion Report (Advanced Research Course)
- International academic research paper (paper under submission is acceptable)

ii Project Research Course (School of Physical Sciences only)

In the Project Research Course, the objective is to develop the students' competency to propose their own project and design the research plans, not just following a given research theme and schedule from their supervisors or research group leaders.

Required Subjects

- Special Program of Big Project Research (2 credits)
- Exercise on Project Research (4 credits)

Credit Approval

If you wish to apply for credit, please submit the following documents to the department office.

Form to Submit

- "Project Plan" or "Project Report"

[Classroom based lecture subjects]

Like ordinary subjects, the subject's main instructor will report grades and approve credits.

[Other than Classroom-based lecture subjects]

Once the "Project Plan" or "Report" has been verified by the student's supervisor and submitted, the Program Committee will verify it and approve the credits.

Course Completion Approval

[Course Completion Criteria]

Students learn how to plan, develop and conduct projects as well as Japan's scientific and technological strategy, to develop their ability to design and accomplish research projects on their own. Students are required to submit at least one research proposal (regardless of scale) as a part of a big research project. Scale of the research should be within that the student can independently propose and design by himself/herself, and the theme should be selected from those his or her academic advisor promotes. If the research environment allows, students are encouraged to conduct the proposed research and give a presentation on the result obtained at an international conference. The requirements for international conferences and research publications will be based on the individual department's criteria for degree conferment.

If you wish to apply for course completion, please submit the following documents to the department office.

Form to Submit

- (Form 8-1) Course Completion Report (For all students)
- (Form 8-3) Course Completion Report (Project Research Course)

iii Development Research Course (School of Physical Sciences only)

In the Development Research Course, the objective is to nurture researchers who are capable of exercising leadership in the development of highly practical technologies based on unique and cutting-edge R&D projects at parent institutes.

Required Subjects

- Seminar on Research and Development (2 credits)
- Exercise of Research and Development (4 credits)

Credit Approval

If you wish to apply for credit, please submit the following documents to the department office.

Forms to Submit

- Copy of patent proposals
- Patent statement confirming that the department has received the patent applications
- [If patent applications were submitted] Patent receipts
- [If patent applications were submitted] Documents related to the patent proposal
 - Such as the Unexamined Patent Application Publication

[Classroom based lecture subjects]

Like ordinary subjects, the subject's main instructor will report grades and approve credits.

[Other than classroom based lecture subjects]

Once verified by the student's supervisor and submitted, copies of the patent proposal forms designated by the student's department are submitted to the Program Committee together with a patent statement confirming that the student's department has received any patent applications. The Program Committee approves the credits after verifying any patent receipts for the patent applications and other documents related to the patent proposal, such as the Unexamined Patent Application Publication.

Course Completion Approval

[Course Completion Criteria]

Through joint research that includes PhD researchers working at corporations, students complete their doctoral thesis based on research that has a practical perspective as well as an academic one. Additionally, students are obligated to make two patent proposals in the technical field of the student's research topic in the doctoral course. The requirements for international conferences and research publications will be based on the individual department's criteria for degree conferment.

If you wish to apply for course completion, please submit the following documents to the department office.

Forms to Submit

- (Form 8-1) Course Completion Report (For all students)
- (Form 8-4) Course Completion Report (Development Research Course)

iv Basic Course

Selecting and completing the Basic Course have been discontinued for students entering in 2018 and later.

In the Basic Course, the Program aims to nurture researchers who are equipped with a high degree of research ability and broad perspective so that they may contribute to society. Its objective is to produce human resources with the comprehensive capability who can meet varied needs, whether in the private sector, or at public institutions, universities or research institutes, wherever our graduates may pursue their careers after completion of the Program.

Required Subjects

See appendix "Subject List and Curriculum"

Course Completion Approval

If you wish to apply for course completion, please submit the following documents to the department office.

Forms to Submit

- (Form 8-1) Course Completion Report (For all students)

IV Course Completion Certificate

Upon completion of the course after fulfilling the course completion criteria and review by the Program Committee, the student will receive a "Course Completion Certificate" upon completion of the course.

[Contact Information]

Academic Affairs Section, Academic and Students Affairs Division
SOKENDAI (The Graduate University for Advanced Studies)
TEL: 046-858-1583 E-mail: gshien@ml.soken.ac.jp