Outline of Courses

Science and Engineering

Category	Subject	Content
Common Subjects of the Doctoral Proguram	Fundamental Academic Skills	In order to improve research skills necessary for independent researchers and engineers, the program will include English presentation exercises and lectures on English communication practices in business situations from people who have been posted overseas by companies and other organizations. In addition, students will also engage in writing exercises. Through these activities, students will develop well-balanced, comprehensive, and practical English language skills that can be used in both academic and business settings. <Lesson Plan> Class 1: English Presentation Exercise 1 Class 2: English Presentation Exercise 2 Class 3: English Presentation Exercise 3 Class 4: Lecture on Business English by an experienced professional Class 5: English Writing Exercise 1 Class 6: English Writing Exercise 2 Class 7: English Writing Exercise 3 Class 8: English Writing Exercise 4
	Advanced Academic Skills	In order to improve independent research skills necessary for independent researchers and engineers, lectures will be given on the skills required for writing academic papers and applying for intellectual property, as well as exercises on skills and presentations for obtaining external funding. In addition, opportunities for researcher exchange will be provided, and students will participate in various seminars that are needed today to cultivate a broad range of knowledge that will contribute to research and problem solving. <Lesson Plan> Class 1: Lecture on Academic Presentation Class 2: Lecture on How to write academic papers Class 3: Lecture on Intellectual Property Rights Class 4: Exercise in preparing application documents for external funding Class 5: Interaction with researchers/engineers Class 6: SDGs Seminar Class 7: Academic Related Seminar Class 8: DX-related seminar
	Career-Path Development	In order to develop careers that will enable them to contribute to society, the program includes visits to the front lines of development at companies, lectures on communication manners necessary in society, and lectures on careers by a variety of stakeholders. Furthermore, through lectures on career path information, group work to deepen self-understanding etc, students will cultivate the ability to proactively consider and carve out a challenging future. <Lesson Plan> Class 1: Developing workplace skills 1 Class 2: Developing workplace skills 2 Class 3: Developing workplace skills 3 Class 4: Career Development Support 1 Class 5: Career Development Support 2 Class 6: Career Development Exercise 1 Class 7: Career Development Exercise 2 Class 8: Career Development Exercise 3
	Advanced Off-campus Exercises	To participate in international conferences, symposiums, seminars, etc. held off-campus in which the official language is English and present their own research either orally or in poster form. Through the process of preparation of presentation materials, presentation, and discussion, students will cultivate advanced information dissemination and communication skills as autonomous researchers active on the global stage. <Lesson Plan> This course will be conducted in an intensive format, and the content and schedule will be determined for each student. Students are required to prepare and submit an exercise plan in advance in consultation with their supervisors. After the exercise, the student submits a report and receives post-exercise guidance from the faculty advisor.
	Advanced Off-campus Training	One credit is granted for a fixed period of time (15 hours or more) of training or practical training at an off-campus institution in order to acquire the special knowledge, skills, and information necessary to carry out doctoral research, or to use special research equipment and observation facilities. Students will acquire advanced research skills outside the university that cannot be obtained through the curriculum and facilities of the graduate school alone, and through direct contact with different fields and new technologies, cultivate a bird's-eye view of science and technology, creativity and applied skills through connection and collaboration with different types of people, and develop the ability to explore and solve problems as an autonomous researcher. In addition, through exposure to the norms, order, and civility of various workplaces, and through communication with people from different positions, diverse backgrounds, and with various values and perspectives, students will cultivate the flexibility and social skills needed to become autonomous, highly-skilled professionals in the future. <Lesson Plan> This course will be conducted in an intensive format, and its content and schedule will be determined for each participant. Participants are required to prepare and submit a training and practical training plan after consulting with their supervisors and host institution in advance. After the training, the participant submits a report and receives post-training guidance from the faculty advisor.
	International Exchange Research	Based on their own research foundation, students will participate in joint research projects with overseas researchers and research institutions and develop advanced skills as autonomous researchers through proactive activities as members. Activities may include overseas research study abroad. Through interaction with overseas researchers in international joint research projects, students will acquire advanced communication skills in the international arena, problem-solving skills and self-awareness and responsibility as autonomous researchers who are responsible for their own projects, professional skills, academic knowledge, and education that will enable them to objectively and impartially judge both their own research and research in different methods, positions, and fields, as well as the ability to understand the cultural and academic backgrounds of Japan and other countries. The program is designed to cultivate many skills, including problem-solving skills, self-awareness, and responsibility as an autonomous researcher with other projects; professional skills, academic knowledge, and education that enable one to objectively and impartially judge both one's own research and research in which methods, positions, and fields differ; flexibility and adaptability to understand differences between Japanese and foreign cultures, laws, and conventions and to accept diverse ideas; an attitude and proactive approach to research ethics, safety, and compliance; a broad perspective that enables one to look at society and science and technology from multiple angles; and career path development through role models. and career path development through role models. <Lesson Plan> This course will be conducted in an intensive format, and the content and schedule will be determined for each student. Students will prepare and submit a joint research implementation plan in consultation with their faculty advisor prior to the course. Upon completion of the activity, the student will submit an implementation report and receive post-approval guidance from the faculty advisor.
	Research Internship	To develop a career as a human resource who can contribute to society, students engage in problem-solving in real-world settings such as companies and research institutions as part of their internship. Students will test how they can apply the knowledge and skills they have acquired to make a useful contribution to society. In addition, students will cultivate their cooperative, social, and adaptive skills by interacting with a variety of stakeholders who are different from those in their daily laboratories and research groups. <Lesson Plan> After consulting with their supervisors, students will, in principle, enter an internship program at a company or other organization that has a practical training period of at least 5 days and includes work on problem solving, and participate in the program if they are hired.
Specialized Subject	Doctoral Research	In Doctoral Special Research, advanced research and solving skills, advanced professional abilities and academic knowledge are cultivated through individual students' practical research work and dissertation writing conducted under the guidance of a faculty advisor. Students independently determine their degree research topics under the advice of their faculty advisors (main and secondary), and prepare and submit a research plan. In the process of conducting research with novelty and originality, students will cultivate advanced professional skills and academic knowledge, advanced research and solving skills, and the ability to autonomously carry out the process of planning, conducting, and disseminating the results of scientific research. The program also cultivates a strong sense of ethics, the will and ability to contribute to society and environmental issues from a scientific and technological perspective, and a broad perspective and flexible thinking ability that enables students to look at society and science and technology from multiple perspectives. Grading will be conducted by at least three faculty members, including the primary and secondary advisors, using a rubric sheet. <Lesson Plan> In this course, a schedule will be set for each student in consultation with the faculty advisor. Guidance will be given as necessary in setting issues and formulating research plans related to degree research, technical guidance required for research promotion, literature research, interim reports, dissemination of results, and thesis writing, to cultivate advanced professional skills and academic knowledge, advanced research and solving skills, and bird's-eye view skills as autonomous researchers and engineers.