Curriculum Guide
Graduate School of Science and Engineering
Ehime University
Academic Year 2023

愛媛大学大学院理工学研究科
Graduate School of Science and Engineering
Ehime University

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History of the Ehime University Graduate School of Science and Engineering

Date	Details
June 1967	Graduate School of Engineering with Departments of Mechanical Engineering, Production Engineering, Electrical Engineering, Metallurgy, and Industrial Chemistry established
April 1968	Department of Civil Engineering est.
April 1973	Department of Electrical Engineering est.
April 1978	Graduate School of Science with Departments of Mathematics, Physics, Chemistry and Biology est.
April 1979	Graduate School of Engineering Department of Marine Engineering est.
April 1981	Graduate School of Science Department of Earth Science est.
April 1984	Graduate School of Engineering Department of Natural Resources est. Department of Metallurgy name changed to Metallurgical Engineering
April 1991	Graduate School of Engineering Department of Computer Science and Engineering est.
April 1992	Graduate School of Engineering (Master's Program) reorganized to form the Departments of Mechanical Engineering, Electrical and Electronic Engineering, Civil and Marine Engineering, Materials Science, Applied Chemistry, and Computer Science
April 1992	Graduate School of Engineering (Doctoral Program), Department of Materials Science and Engineering, Systems Engineering, and Industrial Engineering est.
April 1996	Graduate School of Engineering renamed as the Graduate School of Science and Engineering and the Departments of Mathematical Sciences, Materials Science and Biogeospheric Sciences (Master's Program) and the Department of Environmental Sciences (Doctoral Program) est.
April 2000	Departments of Civil and Marine Engineering, and Materials Science and Engineering renamed as the Departments of Environmental and Construction Engineering, and Functional Materials Science and Engineering
April 2006	Complete reorganization establishing the Departments of Industrial and Environmental Engineering, Materials and Life Science, Electronics and Computer Science, Mathematical and Material Sciences, and Environmental and Functional Science

I. Graduate School of Science and Engineering Diploma Policy

A. Educational philosophy, academic objectives, graduate profile, degree requirements

1. Educational philosophy and academic objectives

The Graduate School of Science and Engineering (GSSE) plays a role in the development of academia, industry, and society by educating and preparing highly specialized professionals and researchers with advanced expertise and abilities. With the rapid changes in society and industry, there is a need for advanced science and engineering professionals who can support and develop current science and technology, face regional and global issues and contribute to the creation and realization of new value through such concepts as SDGs and Society 5.0. We educate motivated students by offering a highly specialized and flexible curriculum, under a broad and distinctive academic research infrastructure ranging from natural to applied science through our centers in the Institute for the Promotion of Science and Technology. Our purpose is to contribute to society by developing and preparing advanced science and engineering professionals with high levels of knowledge, skills, personal values, a broad perspective, and a new value, who can work creatively and cooperatively on the regional and global stages.

2. Graduate profile

The GSSE fosters advanced knowledge and specialized skills in the fields of science and engineering, such as problem-seeking/solving skills, logical thinking with a broad perspective, and communication skills, in order to train science and engineering professionals who can not only inherit and develop today's science and technology, but also contribute to the creation and realization of new value for the future through flexible thinking and high adaptability in our changing society and the global environment. '

3. Academic objectives

Master's Program

a. Advanced expertise and knowledge: Acquire advanced expertise, skills, and ethical standards that enable students to independently conduct research and development activities in the field of science and engineering.

b. Research and development: Acquire the ability to analyze the nature of various issues in society based on their own academic knowledge and a broad perspective. To be prepared to take the lead in solving these issues through the process of advanced research, study and development, and disseminate the results of their work.

c. Social involvement: Acquire the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.

Doctoral Program

a. Highly sophisticated expertise and academic knowledge: Acquire highly sophisticated expertise and academic knowledge based on a wide range of comprehensive skills that enable students to conduct pioneering research and development activities to pave the way in the field of science and engineering.

s. Highly sophisticated problem-seeking/solving skills: Acquire the ability to explore, solve and lead in dealing with novel and original issues with firm ethical standards as autonomous researchers and engineers.

c. Broad perspective: Acquire a broad perspective that allows students to look at society, science, and technology from multiple viewpoints, based on their own academic knowledge and education.

d. Social contribution: Acquire the ability to contribute to the construction of a sustainable society and the revitalization of industry as autonomous researchers and engineers broadly involved in social, environmental and industrial issues from the aspects of science and technology.

4. Degree requirements

Students who have been enrolled in the program for the specified period and have earned the required credits by completing the educational program as specified by the GSSE, and who have passed the master's thesis/doctoral dissertation screening and final examination, will be certified as having completed the program and awarded a degree (master's or doctoral).

*Research fields, faculty lists, and research outlines can be found on the GSSE website.

B. Educational Programs

The Master's Course consists of four basic programs (Industrial Science and Technology, Public Infrastructure, Mathematics and Computer Science, Natural Science) and two special programs (Special Graduate Program on Disaster Mitigation Study for Asian Students, and Regional Engineer Development). Students enroll in one of these programs. The Doctoral Course has no program divisions except for the Disaster Mitigation Study for Asian Students. A description of each program follows.

1. Industrial Science and Technology Program (Master's Program)

a. Educational philosophy and objectives

The Industrial Science and Technology Program, consisting of the fields of Mechanical Engineering, Functional Materials Science and Engineering, and Applied Chemistry, aims to contribute to the development of academia, industry, and society by educating students who will support the modern industrial base and pioneer future knowledge through the development and creation of new machines, new materials with new physical properties and functions, and apply the results of their studies and research activities to life phenomena. This program educates students who are highly interested in the development of industries that enrich humanity and fosters the problem-seeking/solving skills that enable them to conduct research and development activities independently. The purpose of this program is to contribute to society by developing and preparing science and engineering professionals with advanced academic knowledge, skills, personal values, a broad perspective, and a new sense of values who can work creatively and cooperatively on the regional and global stages.

b. Graduate profile

This program fosters 'advanced knowledge and specialized skills in the fields of Mechanical Engineering, Functional Materials Science and Engineering, and Applied Chemistry, problem-seeking/solving skills based on logical thinking, and interpersonal and communicative abilities. We train highly specialized professionals, researchers, and educators who can integrate people, machines, and society from multiple perspectives, creating materials with new physical properties and functions, with the ability to apply them in engineering to life phenomena, contributing to the formation of new industrial infrastructures and sustainable society.

c. Academic objectives

i. Advanced expertise and academic knowledge: Acquire advanced expertise, skills and ethical standards for research that will enable them to independently conduct research and development activities in the fields of Mechanical Engineering, Functional Materials Science and Engineering,

and Applied Chemistry.

ii. Research and development: Acquire the ability to analyze the nature of various issues in society based on their own academic knowledge and a broad perspective, take the lead in solving these issues through the process of advanced research, study, and development, and disseminate the results of their work.

iii. Social involvement: Acquire the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.

2. Public Infrastructure Program

a. Educational philosophy and objectives

The Public Infrastructure Program, consisting of the fields of Civil and Environmental Engineering, Electrical and Electronic Engineering, and Applied Information Engineering, aims to contribute to the development of academia, industry, and society by educating those who will support modern technology and pioneer future knowledge through the results of their studies and research activities in electrical energy, electronics, and information and communication engineering, to support future urban and regional social infrastructure. This program educates students who are highly interested in the realization of sustainable social infrastructure in the era of Society 5.0 and fosters problem-seeking/solving skills that enable them to independently conduct research and development activities. The purpose of this program is to contribute to society by developing and producing advanced science and engineering professionals with advanced academic knowledge, skills, personal values, a broad perspective, and a new sense of values, who can work creatively and cooperatively on the regional and global stages.

b. Graduate profile

This program fosters advanced knowledge and specialized skills in the fields of Civil and Environmental Engineering, Electrical and Electronic Engineering, and Applied Information Engineering. It prepares professionals with problem-seeking/solving skills based on logical thinking, and interpersonal and communicative abilities. It develops highly specialized professionals, researchers and educators who can build a sustainable society, lead innovation in energy and electronics technologies, and implementation of information and communication engineering, including data engineering, leading into the social infrastructure of the Society 5.0 era.

c. Academic objectives

i. Advanced expertise and knowledge: Acquire advanced expertise, skills, and ethical standards for research that enable them to independently conduct research and development activities in the fields of Civil and Environmental Engineering, Electrical and Electronic Engineering, and Applied Information Engineering.

ii. Research and development: Acquire the ability to analyze the nature of various issues in society based on their own academic knowledge and a broad perspective. To take the lead in solving these issues through the process of advanced research, study, and development, and disseminate the results of their work.

iii. Social involvement: Acquire the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.

3. Mathematics and Computer Science Program

a. Educational philosophy and objectives

The Mathematics and Computer Science Program, from Mathematics/Data Science to Computer Science, aims to contribute to the development of academia, industry and society by educating professionals who will support modern technology and pioneer future knowledge through their studies and research activities that theoretically explore the phenomena inherent in mathematics/computer science. They will explore these fields as the basic science that provides a foundation for other fields, or as advanced applied science. This program educates motivated students with a spirit of scientific inquiry through a well-balanced curriculum ranging from advanced theory in various fields of mathematics to applied mathematics, data science, and computer science. It fosters problem-solving skills that enable them to conduct research and development activities independently. The purpose of this program is to contribute to society by developing and preparing science and engineering professionals with advanced knowledge, skills, personal values, a broad perspective, and a new sense of values who can work creatively and cooperatively on the regional and global stages.

b. Graduate profile

This program prepares professionals to work in the fields of Mathematics and Computer Science. Students will acquire problem-seeking/solving skills based on logical thinking, interpersonal and communicative abilities. The graduates will be highly specialized professionals, researchers, and educators who possess a high level of academic knowledge, skills, and personal values, a broad perspective, and a new sense of values and who are able to create and realize new value through mathematical and logical thinking and contribute to the development of a data-driven society based on mathematics, data science, and computer science.

c. Academic objectives

i. Advanced expertise and knowledge: Acquire advanced expertise, skills and ethical standards for research that enable them to independently conduct research and development activities in the fields of Mathematics, Data Science and Computer Science.

ii. Research and development: Acquire the ability to analyze the nature of various issues in society based on their own academic knowledge and a broad perspective, and to take the lead in solving these issues through the process of advanced research, study and development, and disseminate the results of their work.

iii. Social involvement: Students will acquire the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.

4. Natural Science Program

a. Educational philosophy and objectives

The Natural Science Program, consisting of the fields of Physics, Earth Sciences, Chemistry, Biology, and their combined fields, aims to contribute to the development of academia, industry and society by educating professionals who support modern technology and explore future knowledge through their studies and research activities on a wide range of topics related to nature and its surroundings, such as scientific laws and various phenomena in this world, the formation of the universe and the earth, the ecology and mechanism of animals and plants, and the structures and new uses of materials. This program educates motivated students with a spirit of scientific inquiry by offering a highly specialized and flexible curriculum, under the broad and distinctive academic research infrastructure of the GSSE and the centers of the Institute for the Promotion of Science and Technology of Ehime University. It

fosters problem-seeking and problem-solving skills to enable independent research and development activities. The purpose of this program is to contribute to society by developing and preparing science and engineering professionals with advanced knowledge, skills, personal values, a broad perspective, and a new sense of value who can work creatively and cooperatively on the regional and global stages.

b. Graduate profile

This program prepares professionals for work in the field of Natural Science. Graduates will have problem-seeking/solving skills based on logical thinking and have acquired interpersonal and communicative abilities. As professionals, researchers, and educators they will possess a high level of academic knowledge, skills, and personal values, a broad perspective, and a new sense of value, They will be able to contribute to academia and society by taking responsibility for the inheritance, exploration, development, application, and dissemination of knowledge in the natural sciences or by contributing to the development of industry and society by solving various problems in science and technology and creating and realizing new value.

c. Academic objectives

i. Advanced expertise and knowledge: Acquire advanced expertise, skills, and ethical standards for research that enable them to conduct research and development activities independently in the field of Natural Science.

ii. Research and development ability: Acquire the ability to analyze the nature of various issues in society based on their own academic knowledge and a broad perspective. Learn to take the lead in solving these issues through the process of advanced research, study, and development, and disseminate the results of their work.

iii. Social involvement: Acquire the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.

5. Special Graduate Program on Disaster Mitigation Study for Asian Students

a. Educational philosophy and objectives

Many countries in Asia and Africa suffer from natural disasters including earthquakes and meteorological disasters. Engineers working in the fields of disaster prevention and mitigation not only need knowledge of civil engineering but also of a wide range of social sciences. The Special Graduate Program on Disaster Mitigation Study for Asian Students aims at preparing highly trained researchers and engineers with advanced research capabilities in the field of disaster prevention and mitigation measures and the features of natural disasters in Asian and African Regions. To make societies in these regions safer and more resilient against natural disasters, the program has been designed to train Asian and African students in the fields of earthquake and meteorological hazards, their mechanisms of occurrence, damage mitigation, hazard prevention, disaster management, disaster informatics, and other related topics.

b. Graduate profile

This program develops highly specialized professionals, researchers and educators who can develop disaster prevention and mitigation technologies for natural disasters in developing countries according to regional and social conditions and who can play a role in the social implementation of those measures in the region concerned.

c. Academic objectives

Master's Program

i. Advanced expertise and knowledge: Acquire advanced expertise, skills, and ethical standards that enable them to conduct research and development activities independently in the field of disaster prevention and mitigation of natural disasters in developing countries.
ii. Research and development ability: Acquire the ability to analyze the nature of various issues in society based on their own academic knowledge, will be able to take the lead in solving these issues through the process of advanced research, study, and development, and disseminate the results of their work.
iii. Social involvement: Students will acquire the ability to discuss and evaluate the roles and responsibilities of science and technology from the perspectives of society, culture, and the global environment as individuals involved in the dissemination and utilization of science and technology.

Doctoral Program

i. Highly sophisticated expertise and knowledge: Students will acquire highly sophisticated expertise and academic knowledge based on a wide range of comprehensive skills that will enable them to conduct pioneering research and development activities to pave the way for science and technology in the field of disaster prevention and mitigation of natural disasters in developing countries or related fields.
ii. Highly sophisticated problem-seeking/solving skills: Acquire the ability to explore, solve or lead in solving novel and original issues with firm ethical standards as autonomous researchers.
iii. Broad perspective: Acquire a broad perspective that allows them to look at society and science and technology from multiple viewpoints, based on their own academic knowledge and education.
iv. Social contribution: Acquire the ability to contribute broadly to society and environmental issues as involved autonomous researchers and engineers from the aspects of science and technology.

6. Regional Engineer Development Program

a. Educational philosophy and objectives

The Regional Engineer Development Program aims to contribute to the sustainable development of regional industries by fostering highly skilled engineers who possess a broad perspective that combines advanced engineering expertise in regional technology-based industries with knowledge related to technology management/administration, and a diverse range of on-the-job know-how (practical knowledge). This program offers education in multiple specialized fields required by regional technology-related industries, with subjects related to management and administration, and research projects related to regional industries. It fosters practical skills in communication and in working with people in different specialized fields and backgrounds for solving problems in collaboration with regional stakeholders. The purpose of this program is to contribute to society by developing and preparing science and engineering professionals with advanced knowledge, skills, personal values, a broad perspective and a new sense of values who can work creatively and cooperatively on the regional and global stages.

b. Graduate profile

This program educates highly specialized professionals, researchers and educators who can appropriately respond to and solve various issues in the technology-based industries unique to a region, promote product innovation (what to create and how to add value), and contribute to the sustainable development of the local communities (SDGs, etc.).

c. Academic objectives

i. Advanced expertise and knowledge: Acquire advanced expertise, skills, and ethical standards for research implementation that enable them to independently conduct research and development activities in the field of regional technology-based industries.

ii. Research and development ability: Acquire the ability to analyze the nature of various issues in society based on their own academic knowledge and a broad perspective, take the lead in solving these issues through the process of advanced research, study, and development, and disseminate the results of their work.

iii. Social involvement: Acquire the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.

C. Degrees Conferred

Listed below are the degrees conferred by the Master's and Doctoral Programs.

Master's Degrees

Industrial Science and Technology Program	Master of Engineering
Public Infrastructure Program.	Master of Engineering
Mathematics and Computer Science Program.	Master of Science in Mathematics and Computer Science
Special Graduate Program on Disaster Mitigation Study for Asian Students	Master of Engineering
Regional Engineer Development Program	Master of Engineering

Doctoral Degree

Doctor of Engineering/Ph.D. in Mathematics and Computer Science/ Science

*The kind of degree will be determined by the field of research and the content of the dissertation.

D. Thesis/Dissertation Review

Master's Course

Those who are awarded a Master's Degree must acquire a high level of specialized knowledge skills and ethical standards that enable them to independently conduct research and development activities in one field of science and engineering and to be able to continue to develop autonomously as highly specialized professionals, engineers and researchers. With the thesis, the student provides the results of his/her study and research and must demonstrate if he/she has accomplished the quality of work expected for a Master's degree. The thesis, as one of the requirements for completion of the program, will be evaluated according to the following criteria.

1. The thesis must be prepared by the applicant based on the results of the applicant's independent, surveys, research, and development activities.
2. Surveys, research, and development activities must be in accordance with the objectives of the research topic.
3. The results and outcomes must be sufficient and appropriate to form the basis of the discussion and thought.
4. The thesis must be prepared in the proper format and structure in accordance with the ethical standards and requirements of the field of research.

Doctoral Course

The Doctoral Degree is awarded to those who have acquired a high level of specialization and

knowledge based on a wide range of abilities in science and engineering that will enable them to carry out pioneering research and development from a broad scientific and technological perspective, contributing to society and the environment as independent researchers and engineers. The dissertation (Doctoral Degree) provides the results of the student's study and research and must demonstrate if he/she has accomplished the quality of work expected for a Doctoral Degree, including originality. The dissertation, as one of the requirements for completion of the program, will be evaluated according to the following criteria.

1. The dissertation must be based on the results of the research conducted by the student and prepared by the applicant himself/herself.
2. The theme must be academically significant, and the research should be appropriate to the topic.
3. It must exhibit sufficient results, findings, and originality, on which the discussion and thought must be based.
4. The thesis must be prepared in the proper format and structure in accordance with the ethical standards and requirements of the field of research.

II. Curriculum and Academics

A. Curriculum Policy

In line with the policy of the GSSE for the development of professionals and the awarding of degrees, the GSSE provides a systematic curriculum that fosters advanced knowledge and specialized skills in the field of science and engineering, problem-seeking/solving skills based on academic knowledge, logical thinking and a broad perspective, and rich interpersonal and communicative abilities based on advanced education and academic knowledge. The relationship between the subject groups and the diploma policy is clearly indicated in the 'Diploma Policy - Educational Program Chart.'

1. Master's Program

a. Specialized Subjects are offered to foster the advanced knowledge and skills in the specialized fields necessary for the independent implementation of research and development activities. Students acquire advanced specialized skills and academic knowledge that form the basis for research and development activities in the master's research and in the process of writing the master's thesis.
b. Common Major Subjects (basic to GSSE) and Common Program Subjects (basic to the Program) are offered to develop the ability to analyze and solve problems and disseminate results appropriately in the process of investigation, research, and development, and to foster a broad perspective and adaptability in order to flexibly respond to diverse issues.
c. The Common Major Subjects and Common Program Subjects of each program are offered to develop the ability to consider the roles and responsibilities of science and technology and the relationship with society, and to communicate appropriately with a diverse range of people with different values and viewpoints.

2. Doctoral Program

a. Students acquire highly sophisticated expertise and academic knowledge based on a wide range of comprehensive skills that enable them to conduct pioneering research and development activities in their doctoral research and in the process of writing a doctoral dissertation.
b. The Doctoral Program offers Common and Specialized Subjects to develop the ability to be autonomous as researchers and engineers, to acquire firm ethical standards, to explore original issues, and solve problems.
c. The Common Subjects are offered to develop the ability to look at society and science with a broad

perspective based on academic knowledge and education.

d. The Common Subjects are offered to foster an autonomous attitude to contribute to social, industrial and environmental issues from the aspects of science and technology as researchers and engineers.

3. Common to both the Master's and Doctoral Programs

a. Educational methods and grading

i. A curriculum map or study plan is created, and guidance for each program is provided to support the progress of each student.

ii. Classes are conducted in the most appropriate manner according to the educational objectives of the topic, such as lectures, exercises, experiments, surveys, and group work. In addition, interactive remote learning and learning support tools are actively utilized.

iii. Subjects including presentations, group work, and discussions with participants from different fields of science and technology foster a broad perspective, presentation, and communication skills, and promote autonomy as a science and engineering professional.

iv. Grading is strictly conducted using objective methods specified in the syllabus, based on written examinations, reports, oral examinations, and a rubric evaluation.

v. Completion of the program and awarding of degrees are conducted after a rigorous examination in light of the completion requirements and the screening standards for the master's thesis/doctoral dissertation.

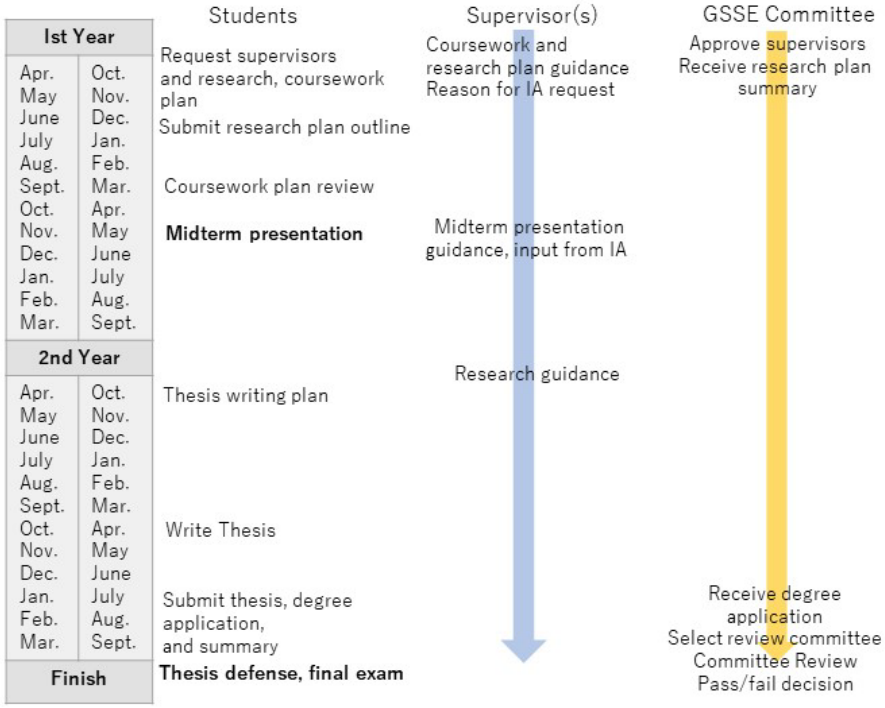
b. Curriculum evaluation

Surveys of students (e.g., class questionnaires, questionnaires for students who have completed or are planning to complete the program), and analysis of various statistical data will be conducted to verify the effectiveness of education and the achievement status of the objectives. The evaluation of the master's thesis/doctoral dissertation by the primary and secondary examiners using a rubric and the student's self-evaluation is analyzed to verify the level of achievement of the student's coursework and the degree.

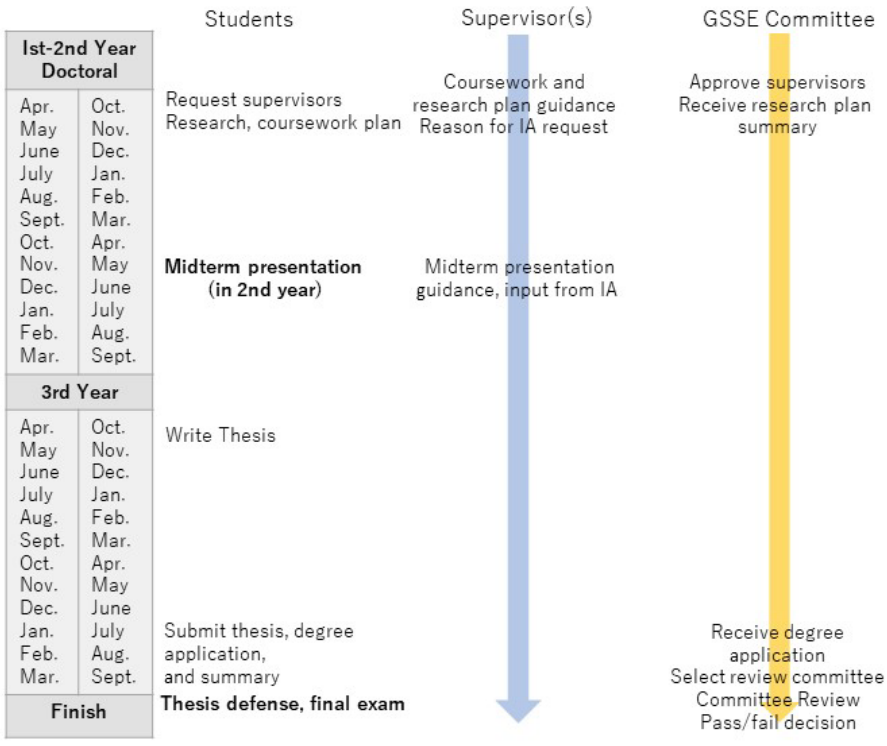
B. Academic Schedule

Please consult with your supervisor(s) in planning your research and use the curriculum chart of the program in which you are enrolled. The main documents, application forms/examples which are required during your course of study can be downloaded from the online Study Support System or the GSSE website. Please use them when needed.

Master's Course



Doctoral Course



C. Research and Thesis Supervision

1. Supervisors (Article 9 of the GSSE Regulations)

Each student is assigned one supervisor and two or more sub-supervisors (one or more in the Master's Program and two or more in the Doctoral Program) to provide guidance in academic planning, research planning and implementation, and writing of the thesis/dissertation. The supervisor is a faculty member in the student's field of study who is qualified to supervise a master's or doctoral course student. The sub-supervisor(s) is selected by the student from among the qualified faculty members of the GSSE. A sub-supervisor may be added at the request of the student at any time. Students are also welcome to seek guidance for their research from any of the GSSE faculty at any time. The supervisor provides guidance in all aspects of the student's studies and research and serves as the main advisor for the thesis/dissertation defense. The sub-supervisor works in cooperation with the supervisor in providing guidance and acts as a substitute if the supervisor is not available.

Students must consult with their supervisor and obtain approval when applying for a tuition fee waiver, or notification of a leave of absence. Students can change supervisors (including sub-supervisors) if there is any problem with the progress of their studies or research. If consent to make a change is obtained, a written application must be submitted to the GSSE.

2. Interdisciplinary Advisor (Master's Course)

Interdisciplinary Advisors (IAs) are faculty members selected from different fields to provide different perspectives. IAs advise and critique the student's presentation methods in the preparation of materials for an academic presentation. It is also training for the student to explain the significance of his/her research to someone from a different academic background. This provides the student with a chance to get an outsider's perspective of their own research. If one of the sub-supervisors is from a different field, he/she may serve as an IA.

3. Educational Coordinators (EC)

Educational Coordinators (EC) are faculty members who manage the educational system within the GSSE, and one is assigned to each field of study. ECs answer questions regarding the curriculum, course content, grading, and any other issues that might be difficult to discuss directly with the course instructor.

4. Research and Guidance Plan (Article 16 of the GSSE regulations)

A research plan should be submitted at the beginning of the first year. Using the 'Outline of Research Plan' form (available at the end of this guide and on the website), discuss your research plan thoroughly with your supervisor and sub-supervisors and submit it online to your supervisor. You can consult with your Interdisciplinary Advisor, as well. Your supervisor will add a summary to be shared with the student and sub-supervisors and the IA. The research title and plan are preliminary, and it is normal for changes to be made as you progress in your research. The title that will appear on your degree is the one you submit when you apply for your degree.

D. Research Ethics

MEXT, in the Guidelines for Responding to Misconduct in Research (MEXT, 2014), requires those involved with research activities to attend research ethics education every year. Students of the GSSE are required to comply with all laws, regulations and ethical standards during the course of their research and the writing of their thesis/dissertation.

In the first year of the Master's Course, students are required to take the 'Advanced Research Ethics' class to learn about the laws, regulations, and information protection that must be followed in their research. In the second year of the Master's Course and the second semester of the Doctoral Course students are required to take an online research ethics course and test, e-APRIN, every year to review and confirm their understanding.

E. Requirements for Completion and Degree Conferral

Students who have completed the set time of study or longer for their Course, have earned the credits required in their Program, and have passed the thesis/dissertation review and final examination will receive certification to be awarded a degree. The certification and degree conferral are held twice a year, in March and September. The 'Academic Regulations' are in the 'Guide to Student Life' booklet, in Japanese. Information on how to apply for a degree can be found at the end of this guide.

1. Term of Enrollment and Period of Study

The standard period of study for the Master's Program is two years. Students who have performed exceptionally well may be permitted to complete the program early, but not less than one year. (Article 45, GSSE Regulations)

The standard period of study for the Doctoral Program is three years (Article 14, GSSE Regulations). Students who have performed exceptionally well may count their two years in the Master's Course as two of those three years. (Article 47, GSSE Regulations) The period of enrollment cannot be more than twice the period of study. (Article 15, Graduate School Regulations)

The period of leave of absence is not included in the standard period of study (Article 14, GSSE Regulations) or the period of enrollment (Article 15, GSSE Regulations). The total time taken for leave of absence cannot exceed the standard period of study (two years for the Master's Course and three years for the Doctoral Course. Article 41, GSSE Regulations).

2. Required Number of Credits

Master's Course at least 30 credits.
Doctoral Course at least 12 credits.

* Please refer to the Course Class list for your program for details.

3. Thesis/Dissertation and Final Exam

In order to complete the course and be awarded a degree you must submit your thesis/dissertation by the set deadline and pass the thesis/dissertation review and final exam. The review and final exam are held twice a year on a set schedule, once in the first semester and once in the second semester.

*Refer to Ehime University Academic Degree Regulations for the Master's and Doctoral Courses for more details.

a. Degree Application and Thesis Review

Submit the degree application form and the thesis/dissertation to the GSSE. Refer to the degree application guidelines and notices for details on submission deadlines, thesis/dissertation requirements, number of copies, etc. for your course. A student who leaves the university after being enrolled in the Doctoral Program for longer than the standard period of study and who has completed the required number of credits, does not need to enroll again or pay the exam fee if the dissertation and degree application form are submitted within one year after leaving.

b. Thesis/Dissertation Review

The thesis/dissertation will be reviewed by an Examination Committee of at least three

members, including the chairperson (main examiner) and two or more secondary examiners, according to the thesis exam standards of the GSSE. The Examination Committee reports its results to the GSSE Committee where the pass/fail decision is made.

c. Final Exam

A final exam is administered after the thesis/dissertation and degree application have been submitted. The results of the exam and thesis/dissertation review will be reviewed by the Examination Committee and it will submit its pass/fail recommendation to the GSSE Committee. If a Doctoral Program student left the university after completing the required credits, the student is eligible to submit a degree application, a dissertation, and take the final exam for review by the Examination Committee within three years after leaving the program. (Article 9, of the GSST Regulations on dissertation review and final exam for the doctoral course.)

4. Completion of the degree before the standard period of study

Master's and Doctoral students who have performed excellently may be allowed to complete their Program in less time than the standard period of study. (Articles 45, 47 GSSE Regulations) You must apply for early completion in advance. The requirements are:

a. All credits required for the Program must be completed.
b. The period of study must meet the requirements stated in Articles 45 and 47.
c. Satisfy the criteria for each Program regarding outstanding performance.
d. Pass the thesis/dissertation review and final exam.

F. Course Completion and Credits

1. Course Planning and Registration

The courses offered (or to be offered) by the GSSE are listed in the Curriculum in this Guide. Use it in consultation with your supervisor to create a study plan which will facilitate your research and ensure that you will complete all the requirements necessary for a degree. A more detailed syllabus with class schedules is available from the first day of the registration period on the online Study Support System. Note that the class timetables, credits, and format may differ, so please check it carefully.

At Ehime University the academic year begins in April and ends in March. The GSSE follows a 2-semester schedule: the 1st semester is from April through September, including the summer break, and the 2nd is from October through March, including the winter and spring breaks. Registration, grading, and approval of requirements follow the semester schedule.

Class registration is done through the Study Support System for a certain period at the beginning of the 1st semester. During that period you can register, change and delete classes at any time and your class timetable will be posted. The GSSE website will post the class schedule.

* To register for courses taken outside the GSSE, you will need to go through the GSSE Student Support Office in the following cases:

a. Courses offered by other graduate schools both in and outside of Ehime University:

If your supervisor agrees that it will benefit your study, you may take courses at other graduate schools in Ehime University or at graduate schools of other universities. Up to 4 credits gained in this way may be counted toward the degree requirements. (Articles 14 and 25 of the GSSE Regulations) The procedures for approval must be completed before taking such a course.

b. Receiving credit for classes taken before entering the GSSE:
It may be possible to transfer credits earned at the GSSE or other graduate schools before admission to the GSSE if it contributes to your research/study plan. A portion of the credits may be counted toward your degree requirements. (Article 21, GSSE Regulations) You must follow the procedure at the time of admission.

c. Off-campus training, seminars, study abroad:
If it contributes to your research/study plan, you may receive credit for fieldwork, off-campus training, off-campus seminars, etc. To receive credit, you must complete the procedure in advance of the activity and submit evidence that it contributes to your research.

d. Courses not listed on the Curriculum list:
Courses may be added after the semester begins. The procedure is different from the usual registration. Such notifications will be posted on the bulletin board, etc.

2. Course changes and cancellation

As mentioned above, it is possible to change and delete courses freely during the registration period through the Study Support System. However, after the period has ended you will need to submit a course cancellation request to the GSSE Student Support Office. If you do not cancel the registration, the course will not be graded. Even if you did not attend it, you will receive a 0 for the course and that will affect your GPA.

If you take a leave of absence, withdraw from school, or are expelled after registration, all the registered courses will be automatically canceled.

3. Attendance and Excused Absence

In order to receive a grade, you must attend 2/3 of the class sessions. If attendance is less than 2/3, you will receive no grade even if you have done the coursework and/or passed the exams. The university guidelines regard absences 'justified' in the following cases:

a. Absence due to infectious disease as specified by the School Safety Law
Type 1: Ebola, bubonic plague, bird flu, (H5N1), etc.
Type 2: Influenza, whooping cough, tuberculosis, etc.
Type 3: Cholera, bacterial dysentery, typhoid fever, etc.

b. Death of a close relative, up to a certain number of days

c. Natural disaster

d. Participation in museum, nursing, teacher's training, certain musical, art and sports activities.

e. Business requested by Ehime University

f. If you receive approval from the dean.

Reasons d, e and f can be used as justifiable absences up to two times during a 15-session course. You must submit a request form to the instructor of the course with 'evidence' for the absence.

4. Exams, make-up tests

Exams may be given at any time during the course period. You may lose credit for the course if you fail to take the exams, including practical tests and reports, even if you have fulfilled the other class requirements. Apply to the class instructor for a make-up exam if you missed it for one of the following reasons.

a. Justifiable absence, except for internships or off-campus training programs
b. Illness or injury not included in a of the section above.
c. Critical illness of a close relative
d. Unavoidable circumstance

Note the following:

a. You must present documentation for the reason you missed the exam.
b. As a rule the make-up exam should be given within 10 days of the original exam, so make your request as soon as possible.
c. Consult with the class instructor if you know in advance that you will miss an exam.

If you have cheated on any exam you will receive no grade for any of the classes you take that semester, and the Faculty Council will take strict disciplinary measures.

5. Grading and Credit Approval

You will receive credit if you satisfy the requirements for the course work and attendance. A clear set of grading criteria based on evaluation of exams, reports, skills, and other methods. These methods are described in the Grading Methods section of the course syllabus. Student performance in presentations, assignments, and other factors may also be considered.

Grades are awarded according to the 4-point system or, as in the case of some courses taken outside the GSSE, you may receive a 'pass'.

Class points	Grade	Grade Point (GP)	Level of Achievement
Above 90	Excellent	4	Outstanding work
80-90	Superior	3	High level
70-80	Good	2	Average
60-70	Acceptable	1	Minimum standard
Below 60	Fail	0	Class goals not achieved
Insufficient work/attendance	No grade	0	Not enough work for evaluation

The grade points (GP) for each course are added and calculated to get the grade point average (GPA).

6. Confirming/Challenging a Grade

You should check your grades on the Study Support System when they are posted. If you have any issues with a grade, as a general rule, you can submit a request for a grade confirmation within one week of the day it is posted. You must make the request to the course instructor in person or by email. If you prefer, you can fill out the Grade Confirmation Request form and submit it at the GSSE Student Support office. You can find the form online on the Study Support System or at the end of this Guide. Fill it out and send it by email to rikougakum@stu.ehime-u.ac.jp).

G. Applications, procedures, notifications, emergency contacts

Go to the Student Support office to take care of various applications, procedures, etc. Some

things can be done on the certificate issuing machine or the Study Support System.

1. Study Support System http://info.ehime-u.ac.jp/syugaku/stu/
   Using this online system you can register for classes, check for class notifications such as cancellations or room changes, view the class syllabus, etc. It can be accessed on and off-campus from PCs and smartphones.
   Notices from the university are posted on the digital bulletin board, the Study Support System and on wall boards. Messages to individual students may be sent through the system or via email to the student's university email address. Please check in often to avoid missing an important message.
2. Bulletin Boards
   Bulletin boards, both digital and wall boards, are used to notify students of procedures, registration, and room changes/cancellations, so be sure to check for information every day. Notifications regarding employment, various qualifications, and scholarships are posted on a separate board.
3. Safetylink24
   This Safety Confirmation System is used by the university to check on the safety of students in the event of a disaster, such as an earthquake of an intensity of 5 or greater in Ehime Prefecture. You can register the email addresses of as many as 6 people here and abroad so they can access the site to confirm your safety. Periodically, notifications are sent out as drills to test and become familiar with the system. We ask for your cooperation at those times.
4. Emergency contact
   In the case of an accident or other urgent reason, contact GSSE Student Support at the following numbers (during office hours).
   GSSE Office 089-927-8926 Science: 089-927-9546 Engineering: 089-927-9690

III. Curriculum

A. Curriculum and Classes

Course lists and the required number of credits per course for each program are in the lists of this Guide. The Study Support System will have the syllabus for each course with the content and starting date. The GSSE courses are grouped in three categories: Common Major Subjects, Common Program Subjects and Specialized Subjects.

1. Common Major Subjects
   These courses teach the basic skills needed for graduate research in science and engineering at the Master's and Doctoral Program levels.
   Master's Course Subjects (Compulsory)
   Advanced Research Ethics: Covers the ethics and rules for conducting scientific research, the concept of ethics, the basis of the rules and regulations, and case studies.
   English for Science and Technology: Learn to use scientific English and terminology, and English communication skills.
   Academic Presentation: Learn to prepare and give an academic presentation to people in and outside the student's field of research.
   Master's Special Study: Supervisors guide the student's research and the preparation of the thesis.

Doctoral Course Subjects

Fundamental Academic Skills, Advanced Academic Skills, Career Path Development, Research Internships. Required electives include Exchange Research and Advanced Off-Campus Training. The subjects are designed to foster the will and ability to engage in and contribute to a wide range of social and environmental issues. There is also emphasis on acquiring a broad perspective and flexibility in thinking.

2. Common Subjects for the Program (Master's Course)

The Common Subjects of each program are a group of required elective subjects that develop the basic knowledge and skills commonly required in each Program. Knowledge of multiple fields and their solution methods, practical training, presentations/discussion, and surveys all build a cross-disciplinary perspective and transferable skills.

3. Specialized Subjects

Specialized Subjects enable students to acquire advanced knowledge and skills related to the student's field of study. Students can also take subjects from outside their program in order to acquire the knowledge necessary for their master's research or to broaden their understanding and interest in related fields, enabling them to cultivate a multifaceted perspective on industry, science and technology. In the Doctoral Program, student's pursue specialized knowledge and advanced problem seeking/solving skills, and receive guidance in writing a dissertation

4. Other Programs

Master's Course students can take courses in Science and Engineering in programs other than their own which may be counted as credits for the completion of their Program. In this way, they mayacquire knowledge in fields outside their Program that may be necessary for their research, but also gain knowledge in a broad range of fields cultivating different perspectives of industry, science, and technology.

5. Course Numbering

A coding system, which is used by many universities in Japan and abroad, is used to identify the organization, field of study, standard, class level and format of each course. This system makes it easier to make a study plan, transfer credits, and when checking the curriculum of a university abroad.

Example: The Systems Dynamics course number code SEA5H-*ME-001

SEA + 5 + H - * + ME - 001
(1) (2) (3) (4) (5) (6)

(1) Course/ major / class: SE stands for **S**cience and **E**ngineering

The GSSE Program codes are as follows

Master's Course	Doctoral Course
A. Industrial Science and Technology	G. Basic Program
B. Public Infrastructure	H. Disaster Mitigation for Asian Students
C. Mathematics and Computer Science	
D. Natural Science	
E. Disaster Mitigation for Asian Students	
F. Regional Engineer Development	

(2) Year: Master's Course = 5, Doctoral Course = 7

(3) Subject category

Master's Course: F = Common Major Subjects, G = Common Program Subjects
H = Specialized Subjects

Doctoral Course: F = Common Major Subjects, H = Specialized Subjects

(4) General Category

* = No category

(5) Subject category

Master's Course: First letter of the subject name ME = **M**echanical **E**ngineering

(6) Subject number: Each subject has a number

B. Industrial Science and Technology Program

DP - Educational Program Chart (Industrial Science and Technology Program)

		Industrial Science and Technology Program	DP1:< Advanced expertise and academic knowledge > Students possess advanced expertise, skills and ethical standards for research implementation that enable them to independently conduct research and development activities in the fields of Mechanical Engineering, Materials Science and Engineering, and Applied Chemistry.	DP2:< Research and development ability > Students have the ability to analyze the essence of various issues in society based on their own academic knowledge and a broad perspective, take the lead in solving these issues through the process of advanced research, study and development, and disseminate the results of their work.	DP3:< Social involvement > Students have the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.
Common Subjects of the Master's Program		Advanced Research Ethics	○		◎
		English in Science and Technology	○	◎	
		Academic Presentation		◎	○
		Mater Research 1,2	◎	◎	○
Common Subjects of Industrial Science and Technology	Subject Group A	Advanced Data Science	○	◎	◎
		Advanced Seminar on SDGs	○	◎	◎
		Leadership Theory and Practice		◎	○
		Project Management		◎	○
		Advanced Management of Technology		○	◎
		Toward the Realization of an Inclusive Society			◎
	Subject Group A	Advanced Engineering 1 (Special Lecture on Mechanical Engineering 1)	○	◎	◎
		Advanced Engineering 2 (Special Lecture on Mechanical Engineering 2)	○	◎	◎
		Advanced Engineering 3 (Seminar on Materials Science and Engineering)	○	◎	◎
		Advanced Engineering 4 (Metal Resources Circulation Engineering)	○	◎	◎
		Advanced Engineering 5 (Cutting Edge of Applied Chemistry 1)	○	◎	◎
		Advanced Engineering 6 (Cutting Edge of Applied Chemistry 2)	○	◎	◎
	Subject Group C	Intellectual Property		◎	◎
		Sensing and Applications	○	◎	○
		Internship		◎	◎
		Safety and Health Management		○	◎
		Basics for Management of Chemicals		○	◎
		DS/AI Application PBL Exercise 1	○	◎	○
		DS/AI Application PBL Exercise 2	○	◎	○
		Advanced Mathematics 1A, 1B	◎		
		Advanced Mathematics 2A, 2B	◎		
Specialized Subjects			◎	○	○

Master's Program: Industrial Science and Technology Program,Graduate School of Science and Engineering

Category	Subcategory	Subject	Credits		Student Year	Semester		Required Credits	Note	Subject code
			Compulsory	Elective		Spring	Fall			
Common Major Subjects		Advanced Research Ethics	1		1	○		7 compulsory credits	Intensive	SEA5F-**-001~003
		English in Science and Technology	1		1 / 2	○			Intensive	SEA5F-**-004~006
		Academic Presentation	1		1 / 2	○			Intensive	SEA5F-**-007~009
		Master Research 1	2		1	○				SEA5F-**-010~012
		Master Research 2	2		2	○				SEA5F-**-013~015
Common Program Subjects	Subject Group A	Advanced Data Science		1	1	○		6 Credits or more(2 credits or more from Subject Group A, 3 credits or more from Subject Group B)		SEA5G-**-001
		Advanced Seminar on SDGs		1	1	○				SEA5G-**-002
		Leadership Theory and Practice		1	1		○			SEA5G-**-003
		Project Management		1	1	○				SEA5G-**-004
		Advanced Management of Technology		1	2	○				SEA5G-**-005
		Toward the Realization of an Inclusive Society		1	1 / 2		○			SEA5G-**-006
	Subject Group B	Advanced Engineering 1 (Special Lecture on Mechanical Engineering 1)		1	1	○				SEA5G-**-007
		Advanced Engineering 2 (Special Lecture on Mechanical Engineering 2)		1	1	○				SEA5G-**-008
		Advanced Engineering 3 (Seminar on Materials Science and Engineering)		1	1	○				SEA5G-**-009
		Advanced Engineering 4 (Metal Resources Circulation Engineering)		1	1		○			SEA5G-**-010
		Advanced Engineering 5 (Cutting Edge of Applied Chemistry 1)		1	1	○				SEA5G-**-011
		Advanced Engineering 6 (Cutting Edge of Applied Chemistry 2)		1	1		○			SEA5G-**-012
	Subject Group C	Intellectual Property		1	2	○				SEA5G-**-013
		Sensing and Applications		2	1	○				SEA5G-**-014
		Internship		1	1 / 2	○			Intensive	SEA5G-**-015~017
		Safety and Health Management		1	1	○				SEA5G-**-018
		Basics for Management of Chemicals		1	1 / 2	○			Intensive	SEA5G-**-019
		DS/AI Application PBL Exercise 1		1	1	○				SEA5G-**-020
		DS/AI Application PBL Exercise 2		1	1		○			SEA5G-**-021
		Advanced Mathematics 1A		2	1	○				SEA5G-**-022
		Advanced Mathematics 1B		2	1	○				SEA5G-**-023
		Advanced Mathematics 2A		2	1		○			SEA5G-**-024
		Advanced Mathematics 2B		2	1		○			SEA5G-**-025
Specialized Subjects	Mechanical Engineering	Systems Dynamics		2	1 / 2	○		14 Credits or more	Every other year	SEA5H-*ME-001
		Mechanical Vibration		2	1 / 2	○			Every other year	SEA5H-*ME-002
		Modern Control Theory		2	1 / 2		○		Every other year	SEA5H-*ME-003
		Intelligent Machine and Systems		2	1 / 2	○			Every other year	SEA5H-*ME-004
		Advanced Lecture on Intelligent Control Systems		2	1 / 2		○		Every other year	SEA5H-*ME-005
		Viscous Fluid Mechanics		2	1 / 2	○				SEA5H-*ME-006
		Statistical thermodynamics		2	1 / 2	○			Every other year	SEA5H-*ME-007
		Combustion		2	1 / 2		○		Every other year	SEA5H-*ME-008
		Computational Thermodynamics		2	1 / 2		○		Every other year	SEA5H-*ME-009
		Advanced Heat Transfer		2	1 / 2	○			Every other year	SEA5H-*ME-010
		Evolutional Fluid Mechanics		2	1 / 2		○		Every other year	SEA5H-*ME-011
		Strength and Fracture of Materials		2	1 / 2	○			Every other year	SEA5H-*ME-012
		Advanced Materials Processing		2	1 / 2		○		Every other year	SEA5H-*ME-013
		Advanced Materials Forming and Processing		2	1 / 2		○		Every other year	SEA5H-*ME-014
		Advanced Strength of Materials		2	1 / 2	○			Every other year	SEA5H-*ME-015
		Advanced materials		2	1 / 2	○			Every other year	SEA5H-*ME-016
		Ship Maneuvering and Control		2	1 / 2	○			Every other year	SEA5H-*ME-017
		Numerical Structural Analysis		2	1 / 2	○			Every other year	SEA5H-*ME-018
		Special International Exchange Activities		1	1 / 2	○			Intensive	SEA5H-*ME-019
	Materials Science and Engineering	Functional Inorganic Materials		2	1	○		14 Credits or more		SEA5H-*MSe-001
		Glass and Slag Engineering Science		2	1	○				SEA5H-*MSe-002
		Microstructure design of materials		2	1	○				SEA5H-*MSe-003
		Optical properties and engineering of solids		2	1		○			SEA5H-*MSe-004
		Surface chemistry of solids		2	1		○			SEA5H-*MSe-005
		Electrical and Electronic Properties of Materials		2	1	○				SEA5H-*MSe-006
		Joining and Welding Engineering		2	1		○			SEA5H-*MSe-007
		Magnetism and Magnetic Materials		2	1		○			SEA5H-*MSe-008
		Introduction to Materials Characterization		1	1	○				SEA5H-*MSe-009
		Practice of Materials Characterization		1	1	○				SEA5H-*MSe-010
		Materials Science and Engineering Seminar		4	1	○				SEA5H-*MSe-011
		Characterization of Fiber and Polymer Materials		1	1		○		Intensive	SEA5H-*MSe-012
		Special Lecture on Materials Science 1		1	1	○			Intensive	SEA5H-*MSe-013
		Special Lecture on Materials Science 2		1	1		○		Intensive	SEA5H-*MSe-014
		Composite Materials		2	1		○		Intensive	SEA5H-*MSe-015
		Materials Design		2	1		○		Intensive	SEA5H-*MSe-016
	Applied Chemistry	Advanced Organic Chemistry 1		2	1 / 2	○		14 Credits or more		SEA5H-*ACh-001
		Advanced Organic Chemistry 2		2	1 / 2		○			SEA5H-*ACh-002
		Advanced Polymer Chemistry 1		2	1 / 2	○				SEA5H-*ACh-003
		Advanced Polymer Chemistry 2		1	1 / 2		○			SEA5H-*ACh-004
		Advanced Polymer Chemistry 3		1	1 / 2		○			SEA5H-*ACh-005
		Advanced Inorganic Chemistry		2	1 / 2	○				SEA5H-*ACh-006
		Advanced Analytical Chemistry		2	1 / 2	○				SEA5H-*ACh-007
		Advanced Physical Chemistry		2	1 / 2		○			SEA5H-*ACh-008
		Advanced Bioengineering		2	1 / 2		○		Every other year	SEA5H-*ACh-009
		Advanced Biochemistry 1		2	1 / 2	○				SEA5H-*ACh-010
		Advanced Biochemistry 2		2	1 / 2		○			SEA5H-*ACh-011
		Advanced Methodology in Biological Chemistry 1		2	1 / 2	○				SEA5H-*ACh-012
		Advanced Methodology in Biological Chemistry 2		2	1 / 2		○			SEA5H-*ACh-013
		Topics in Applied Chemistry 1		1	1 / 2	○			Intensive	SEA5H-*ACh-014
		Topics in Applied Chemistry 2		1	1 / 2	○			Intensive	SEA5H-*ACh-015
		Topics in Applied Chemistry 3		1	1 / 2		○		Intensive	SEA5H-*ACh-016
		Short-term Overseas Education		2	1 / 2	○			Intensive	SEA5H-*ACh-017
		Special Exercise in Applied Chemistry 1		2	1	○				SEA5H-*ACh-018
		Special Exercise in Applied Chemistry 2		2	2	○				SEA5H-*ACh-019
		Applied Chemistry Seminar 1		2	1	○				SEA5H-*ACh-020
		Applied Chemistry Seminar 2		2	2	○				SEA5H-*ACh-021

Degree: Master of Engineering

Requirements for Completing the Industrial Science and Technology Master's Program

Acquire at least 30 credits, including the requirements listed below, complete the master's thesis review and pass the final exam.

(1) 7 compulsory credits from the Common Subjects of the Master's Program

(2) 6 credits or more from the Common Subjects of Industrial Science and Technology
（2 credits or more from Subject Group A, 3 credits or more from Subject Group B）

(3) 14 credits or more from the Specialized Subjects in the studied field.

Notes:

1. Credits earned in other programs in the Graduate School of Science and Engineering or in subjects offered by other graduate schools may be added to the requirements
for completion.

2. [1 / 2] indicates they may be taken any year.

3. Working adult students may take subjects by "Special Exception for Educational Methods". Please inquire if this applies to you.

C. Public Infrastructure Program

DP - Educational Program Chart　(Public Infrastructure Program)

		Public Infrastructure Program	DP1:< Advanced expertise and academic knowledge > Students possess advanced expertise, skills and ethical standards for research implementation that enable them to independently conduct research and development activities in the fields of Civil and Environmental Engineering, Electrical and Electronic Engineering, and Applied Information Engineering.	DP2:< Research and development ability > Students have the ability to analyze the essence of various issues in society based on their own academic knowledge and a broad perspective, take the lead in solving these issues through the process of advanced research, study and development, and disseminate the results of their work.	DP3:< Social involvement > Students have the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.
Common Subjects of the Master's Program		Advanced Research Ethics	○		◎
		English in Science and Technology	○	◎	
		Academic Presentation		◎	○
		Mater Research 1,2	◎	◎	○
Common Subjects of Public Infrastructure	Subject Group A	Advanced Data Science	○	◎	◎
		Advanced Seminar on SDGs	○	◎	◎
		Leadership Theory and Practice		◎	○
		Project Management		◎	○
		Advanced Management of Technology		○	◎
		Toward the Realization of an Inclusive Society			◎
	Subject Group B	Advanced Infrastructure Engineering		○	◎
		New Energy and Urban Design	○	◎	◎
		Advanced Study of Information and Communication Systems	○	◎	◎
		Lectures on ICT Society	○		◎
		Advanced Cyber Security	○	○	○
		Introduction to Artificial Intelligence A	◎	○	○
	Subject Group C	Intellectual Property	○	○	◎
		Sensing and Applications	○	◎	○
		Internship		◎	◎
		Safety and Health Management		○	◎
		DS/AI Application PBL Exercise 1	○	◎	○
		DS/AI Application PBL Exercise 2	○	◎	○
		Advanced Mathematics 1A, 1B	◎		
		Advanced Mathematics 2A, 2B	◎		
Specialized Subjects			◎	○	○

Master Program: Public Infrastructure Program, Graduate School of Science and Engineering

Category	Subcategory	Subject	Credits		Student Year	Semester		Required Credits	Note	Subject code
			Compulsory	Elective		Spring	Fall			
Common Major Subjects		Advanced Research Ethics	1		1	○		7 compulsory credits	Intensive	SEB5F-**-001~003
		English in Science and Technology	1		1/2	○			Intensive	SEB5F-**-004~006
		Academic Presentation	1		1/2	○			Intensive	SEB5F-**-007~009
		Master Research 1	2		1	○				SEB5F-**-010~012
		Master Research 2	2		2	○				SEB5F-**-013~015
Common Program Subjects	Subject Group A	Advanced Data Science		1	1	○		6 Credits or more(2 credits or more from Subject Group A, 3 credits or more from Subject Group B)		SEB5G-**-001
		Advanced Seminar on SDGs		1	1	○				SEB5G-**-002
		Leadership Theory and Practice		1	1		○			SEB5G-**-003
		Project Management		1	1	○				SEB5G-**-004
		Advanced Management of Technology		1	2	○				SEB5G-**-005
		Toward the Realization of an Inclusive Society		1	1/2		○			SEB5G-**-006
	Subject Group B	Advanced Infrastructure Engineering		1	2	○				SEB5G-**-007
		New Energy and Urban Design		2	1		○			SEB5G-**-008
		Advanced Study of Information and Communication Systems		2	1		○			SEB5G-**-009
		Lectures on ICT Society		2	1		○			SEB5G-**-010
		Advanced Cyber Security		1	1		○			SEB5G-**-011
		Introduction to Artificial Intelligence A		2	1	○				SEB5G-**-012
	Subject Group C	Intellectual Property		1	2	○				SEB5G-**-013
		Sensing and Applications		2	1	○				SEB5G-**-014
		Internship		1	1/2		○		Intensive	SEB5G-**-015~017
		Safety and Health Management		1	1	○				SEB5G-**-018
		DS/AI Application PBL Exercise 1		1	1	○				SEB5G-**-019
		DS/AI Application PBL Exercise 2		1	1		○			SEB5G-**-020
		Advanced Mathematics 1A		2	1	○				SEB5G-**-021
		Advanced Mathematics 1B		2	1	○				SEB5G-**-022
		Advanced Mathematics 2A		2	1		○			SEB5G-**-023
		Advanced Mathematics 2B		2	1		○			SEB5G-**-024
Specialized Subjects	Civil and Environmental Engineering	Disaster Risk Reduction Engineering		2	1	○		16 Credits or more		SEB5H-*CEE-001
		Principle of Infrastructure Design		2	1		○			SEB5H-*CEE-002
		Practical Asset Management		2	1	○				SEB5H-*CEE-003
		Numerical Simulation of Solid Mechanics		2	1		○			SEB5H-*CEE-004
		Simulation of Environmental Dynamics		2	1		○			SEB5H-*CEE-005
		Biodiversity and Human Activities		2	1	○				SEB5H-*CEE-006
		Behavioral Science for Infrastructure Planning		2	1	○				SEB5H-*CEE-007
		Systems Engineering		2	1	○				SEB5H-*CEE-008
		Regional Management		2	1	○				SEB5H-*CEE-009
		Public Governance		2	1		○			SEB5H-*CEE-010
		Seminar 1 on Civil and Environmental Engineering		3	1~2	○				SEB5H-*CEE-011
		Seminar 2 on Civil and Environmental Engineering		3	1~2	○				SEB5H-*CEE-012
	Electrical and Electronic Engineering	Applied Electromagnetism		2	1	○		16 Credits or more		SEB5H-*EEe-001
		Advanced Theory of Electric Circuit		2	1	○				SEB5H-*EEe-002
		Advanced Electronic Circuits		2	1	○				SEB5H-*EEe-003
		Advanced Theory of Plasma Engineering		2	1/2		○		Every other year	SEB5H-*EEe-004
		Advanced High Voltage Engineering		2	1/2		○		Every other year	SEB5H-*EEe-005
		Advanced Theory of Electric and Electronic Materials		2	1/2		○		Every other year	SEB5H-*EEe-006
		Advanced Theory of Semiconductor Device		2	1/2		○		Every other year	SEB5H-*EEe-007
		Optimization Mathematics for Advanced Course		2	1/2		○		Every other year	SEB5H-*EEe-008
		Digital Signal Processing for Advanced Course		2	1/2		○		Every other year	SEB5H-*EEe-009
		Seminar on Electrical and Electronic Engineering 1		3	1~2	○				SEB5H-*EEe-010
		Seminar on Electrical and Electronic Engineering 2		3	1~2	○				SEB5H-*EEe-011
	Applied Information Engineering	Advanced Network System		2	1	○		16 Credits or more		SEB5H-*AIE-001
		Advanced Information Security		2	1		○			SEB5H-*AIE-002
		Advanced System Analysis		2	1	○				SEB5H-*AIE-003
		Advanced Digital Communication		1	1		○			SEB5H-*AIE-004
		Advanced System Development Practice		2	1		○			SEB5H-*AIE-005
		Seminar on Marketing and Business Model		1	1	○				SEB5H-*AIE-006
		Introduction to Computer System B		1	1	○				SEB5H-*AIE-007
		Advanced Computer System		1	1	○				SEB5H-*AIE-008
		Seminar on Distributed System		2	1	○				SEB5H-*AIE-009
		Introduction to Artificial Intelligence B		1	1		○			SEB5H-*AIE-010
		Advanced Intelligent System		1	1	○				SEB5H-*AIE-011
		Introduction to Image Processing B		1	1	○				SEB5H-*AIE-012
		Digital Signal Processing for Advanced Course		2	1/2		○		Every other year	SEB5H-*AIE-013
		Practice in Information and Communication Technology 1		1	1	○				SEB5H-*AIE-014
		Practice in Information and Communication Technology 2		1	1		○			SEB5H-*AIE-015

Degree: Master of Engineering

Requirements for Completing the Public Infrastructure Master's Program

Acquire at least 30 credits, including the requirements listed below, complete the master's thesis review and pass the final exam.

(1) 7 compulsory credits from the Common Major Subjects

(2) 6 credits or more from the Common Program Subjects

（2 credits or more from Subject Group A, 3 credits or more from Subject Group B）

(3) 16 credits or more from the Specialized Subjects in the studied field.

Notes:

1. Credits earned in other programs in the Graduate School of Science and Engineering or in subjects offered by other graduate schools may be added to the requirements for completion.
2. [1/2] indicates the subject can be taken any year.
3. Working adult students may take subjects by "Special Exception for Educational Methods". Please inquire if this applies to you.

D. Mathematics and Computer Science Program

DP - Educational Program Chart (Mathematics and Computer Science Program)

		Mathematics and Computer Science Program	DP1:＜Advanced expertise and academic knowledge＞ Students possess advanced expertise, skills and ethical standards for research implementation that enable them to independently conduct research and development activities in the fields of Mathematics, Data Science and Computer Science.	DP2:＜Research and development ability＞ Students have the ability to analyze the essence of various issues in society based on their own academic knowledge and a broad perspective, take the lead in solving these issues through the process of advanced research, study and development, and disseminate the results of their work.	DP3:＜Social involvement＞ Students have the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.
Common Subjects of the Master's Program		Advanced Research Ethics	○		◎
		English in Science and Technology	○	◎	
		Academic Presentation		◎	○
		Mater Research 1,2	◎	◎	○
Common Subjects of Math. & Comp. Sci.	Basic Subjects	Seminar on Mathematics and Computer Science	○	◎	○
		Fundamentals of Applied Mathematics	○	◎	○
		Fundamentals of Programming	○	◎	○
		Advanced Seminar on SDG s	○	◎	◎
		Advanced Management of Technology		○	◎
		Toward the Realization of an Inclusive Society			◎
	Practical Subjects	Advanced Seminar A Advanced Seminar B Advanced Seminar C Advanced Seminar D	◎	◎	○
		DS/AI Application PBL Exercise 1	○	◎	○
		DS/AI Application PBL Exercise 2	○	◎	○
		Internship		◎	◎
Specialized Subjects			◎	○	○

Master's Program: Mathematics and Computer Science Program, Graduate School of Science and Engineering

Category	Subcategory	Subject	Credits		Student Year	Semester		Required Credits	Note	Subject code
			Compulsory	Elective		Spring	Fall			
Common Major Subjects		Advanced Research Ethics	1		1	○		7 compulsory credits	Intensive	SEC5F-**-001
		English in Science and Technology	1		1 / 2	○			Intensive	SEC5F-**-002
		Academic Presentation	1		1 / 2	○			Intensive	SEC5F-**-003
		Master Research 1	2		1	○				SEC5F-**-004
		Master Research 2	2		2	○				SEC5F-**-005
Common Program Subjects	Basic Subjects	Seminar on Mathematics and Computer Science	2		1	○		4 credits or more credits including 2 compulsory credits		SEC5G-**-001
		Fundamentals of Applied Mathematics		2	1		○			SEC5G-**-002
		Fundamentals of Programming		2	1		○			SEC5G-**-003
		Advanced Seminar on SDGs		1	1	○				SEC5G-**-004
		Advanced Management of Technology		1	2	○				SEC5G-**-005
		Toward the Realization of an Inclusive Society		1	1 / 2	○				SEC5G-**-006
	Practical Subjects	Advanced Seminar A	2		1	○		6 credits or more credits including 4 compulsory credits		SEC5G-**-007
		Advanced Seminar B	2		1		○			SEC5G-**-008
		Advanced Seminar C		2	2	○				SEC5G-**-009
		Advanced Seminar D		2	2		○			SEC5G-**-010
		DS/AI Application PBL Exercise 1		1	1	○				SEC5G-**-011
		DS/AI Application PBL Exercise 2		1	1		○			SEC5G-**-012
		Internship		1	1 / 2	○			Intensive	SEC5G-**-013
Specialized Subjects	Introductory Subjects	Introduction to Algebra A		3	1 / 2	○		6 Credits or more	Every other year	SEC5H-*MCS-001
		Introduction to Algebra B		3	1 / 2	○			Every other year	SEC5H-*MCS-002
		Introduction to Geometry A		3	1 / 2		○		Every other year	SEC5H-*MCS-003
		Introduction to Geometry B		3	1 / 2		○		Every other year	SEC5H-*MCS-004
		Introduction to Analysis A		3	1 / 2	○			Every other year	SEC5H-*MCS-005
		Introduction to Analysis B		3	1 / 2	○			Every other year	SEC5H-*MCS-006
		Introduction to Applied Mathematics and Computation A		3	1 / 2	○			Every other year	SEC5H-*MCS-007
		Introduction to Applied Mathematics and Computation B		3	1 / 2	○			Every other year	SEC5H-*MCS-008
		Introduction to Computer System A		2	1		○			SEC5H-*MCS-009
		Introduction to Computer System B		1	1	○				SEC5H-*MCS-010
		Introduction to Artificial Intelligence A		2	1	○				SEC5H-*MCS-011
		Introduction to Artificial Intelligence B		1	1		○			SEC5H-*MCS-012
		Introduction to Image Processing A		2	1		○			SEC5H-*MCS-013
		Introduction to Image Processing B		1	1	○				SEC5H-*MCS-014
	Advanced Subjects	Advanced Algebra		2	1		○	2 Credits or more		SEC5H-*MCS-015
		Advanced Topology		2	1		○			SEC5H-*MCS-016
		Advanced Geometry		2	1	○				SEC5H-*MCS-017
		Advanced Analysis		2	1		○			SEC5H-*MCS-018
		Advanced Applied Mathematical Sciences		2	1		○			SEC5H-*MCS-019
		Advanced Computer System		1	1	○				SEC5H-*MCS-020
		Advanced Image Processing and Understanding		1	1	○				SEC5H-*MCS-021
		Seminar on Distributed System		2	1	○				SEC5H-*MCS-022
		Advanced Intelligent System		1	1	○				SEC5H-*MCS-023
		Advanced Software System		1	1		○			SEC5H-*MCS-024
		Advanced Intelligent Communication		1	1		○			SEC5H-*MCS-025
		Advanced Information Infrastructure System		1	1		○			SEC5H-*MCS-026
		Advanced Software Engineering		1	1	○				SEC5H-*MCS-027
		Advanced System Analysis		2	1	○				SEC5H-*MCS-028
		Advanced Information Security		2	1		○			SEC5H-*MCS-029
		Advanced Network System		2	1	○				SEC5H-*MCS-030

Degree: Master of Science in Mathematics and Computer Science

Requirements for Completing the Mathematics and Computer Science Master's Program

Acquire at least 30 credits, including the requirements listed below, complete the master's thesis review and pass the final exam.

(1) 7 compulsory credits from the Common Major Subjects

(2) 10 credits or more from the Common Program Subjects of Mathematics and Computer Science (4 credits or more including 2 credits of the "Seminar on Mathematics and Computer Science" from the Basic Subjects, and 6 credits or more including 4 credits of the "Advanced Seminar A, B" from the Practical Subjects)

(3) 6 credits or more from the Introductory Subjects, and 2 credits or more from the Advanced Subjects in the Specialized Subjects.

Notes

1. Credits earned in other programs in the Graduate School of Science and Engineering or in subjects offered by other graduate schools may be added to the requirements for completion.
2. [1/2] indicates the subject can be taken any year.
3. Working adult students may take subjects by "Special Exception for Educational Methods". Please inquire if this applies to you.

E. Natural Science Program

DP - Educational Program Chart　(Natural Science Program)

	Natural Science Program	DP1:＜Advanced expertise and academic knowledge＞ Students possess advanced expertise, skills and ethical standards for research implementation that enable them to independently conduct research and development activities in the field of Natural Science.	DP2:＜Research and development ability＞ Students have the ability to analyze the essence of various issues in society based on their own academic knowledge and a broad perspective, take the lead in solving these issues through the process of advanced research, study and development, and disseminate the results of their work.	DP3:＜Social involvement＞ Students have the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.
Common Subjects of the Master's Program	Advanced Research Ethics	○		◎
	English in Science and Technology	○	◎	
	Academic Presentation		◎	○
	Mater Research 1,2	◎	◎	○
Common Subjects of Natural Science	Basics for Management of Chemicals	◎		○
	Safety and Health for Scientific Experiments and Fieldworks	◎		○
	Advanced Data Science	○	◎	◎
	Advanced Seminar on SDGs	○	◎	◎
	Intellectual Property	○	○	◎
	Advanced Seminar A	◎	◎	○
	Advanced Seminar B			
	Advanced Seminar C			
	Advanced Seminar D			
	International Academic Seminar		◎	◎
	Off-campus Training 1	○	○	○
	Off-campus Training 2			
	Internship		◎	◎
Specialized Subjects		◎	○	○

Master's Program: Natural Science Program, Graduate School of Science and Engineering

Category	Subcategory	Subject	Credits		Student Year	Semester		Required Credits	Note	Subject code
			Compulsory	Elective		Spring	Fall			
Common Major Subjects		Advanced Research Ethics	1		1		○	7 compulsory credits	Intensive	SED5F-**-001~004
		English in Science and Technology	1		1 / 2		○		Intensive	SED5F-**-005~008
		Academic Presentation	1		1 / 2		○		Intensive	SED5F-**-009~012
		Master Research 1	2		1		○			SED5F-**-013~016
		Master Research 2	2		2		○			SED5F-**-017~020
Common Program Subjects		Basics for Management of Chemicals		1	1 / 2	○		12 Credits or more	Intensive	SED5G-**-001
		Safety and Health for Scientific Experiments and Fieldworks		1	1 / 2	○			Intensive	SED5G-**-002
		Advanced Data Science		1	1 / 2	○				SED5G-**-003
		Advanced Seminar on SDGs		1	1 / 2	○				SED5G-**-004
		Intellectual Property		1	1 / 2	○				SED5G-**-005
		Advanced Seminar A		3	1	○			Intensive	SED5G-**-006
		Advanced Seminar B		3	1		○		Intensive	SED5G-**-007
		Advanced Seminar C		3	2	○			Intensive	SED5G-**-008
		Advanced Seminar D		3	2		○		Intensive	SED5G-**-009
		International Academic Seminar		1	1 / 2		○		*1	SED5G-**-010
		Off-campus Training 1		1	1		○		*2	SED5G-**-011
		Off-campus Training 2		1	2		○		*2	SED5G-**-012
		Internship		1	1 / 2		○		Intensive	SED5G-**-013
Specialized Subjects	Physics	Advanced Quantum Mechanics		2	1 / 2	○		6 Credits or more	Every other year	SED5H-*PHY-001
		Advanced Condensed Matter Physics		2	1 / 2	○			Every other year	SED5H-*PHY-002
		Advanced Cosmology		2	1 / 2	○			Every other year	SED5H-*PHY-003
		Physics of Liquid Matter		2	1 / 2	○			Every other year	SED5H-*PHY-004
		Optical Physics		2	1 / 2		○		Every other year	SED5H-*PHY-005
		Advanced Statistical Physics		2	1 / 2	○			Every other year	SED5H-*PHY-006
		Galactic Astrophysics		2	1 / 2	○			Every other year	SED5H-*PHY-007
		Space Plasma Physics		2	1 / 2		○		Every other year	SED5H-*PHY-008
		High Energy Astrophysics		2	1 / 2	○			Every other year	SED5H-*PHY-009
		Advanced Topics on Radio Interferometers		2	1 / 2		○		Inter-Univ.	SED5H-*PHY-010
		Galactic Radio Astronomy		2	1 / 2	○			Inter-Univ.	SED5H-*PHY-011
		Advanced Theory of Astrophysics 1		2	1 / 2	○			Inter-Univ	SED5H-*PHY-012
		Advanced Mechanics		2	1		○			SED5H-*PHY-013
		Advanced Electromagnetism		2	1	○				SED5H-*PHY-014
		Basic Study for Electromagnetic Waves		2	1	○				SED5H-*PHY-015
	Earth Sciences	Advanced Geology A		2	1 / 2	○		6 Credits or more	Every other year	SED5H-*ESc-001
		Advanced Geology B		2	1 / 2	○			Every other year	SED5H-*ESc-002
		Evolutionary Paleobiology A		2	1 / 2		○		Every other year	SED5H-*ESc-003
		Evolutionary Paleobiology B		2	1 / 2		○		Every other year	SED5H-*ESc-004
		Advanced Petrology and Mineralogy		2	1 / 2		○			SED5H-*ESc-005
		Theoretical Mineral Physics A		2	1 / 2		○		Every other year	SED5H-*ESc-006
		Theoretical Mineral Physics B		2	1 / 2		○		Every other year	SED5H-*ESc-007
		Advanced Geophysics A		2	1 / 2	○			Every other year	SED5H-*ESc-008
		Advanced Geophysics B		2	1 / 2	○			Every other year	SED5H-*ESc-009
		Earth and Planetary Tectonics		2	1 / 2	○				SED5H-*ESc-010
		Properties of Earth and Planetary Materials		2	1 / 2		○			SED5H-*ESc-011
		Introduction to Atmospheric and Ocean Sciences		2	1 / 2	○				SED5H-*ESc-012
		Ocean Dynamics		2	1 / 2		○			SED5H-*ESc-013
		Global Environmental Changes		2	1 / 2	○				SED5H-*ESc-014
		Advanced Practice on Earth Sciences A		2	1	○				SED5H-*ESc-015
		Advanced Practice on Earth Sciences B		2	1		○			SED5H-*ESc-016
		Advanced Practice on Earth Sciences C		2	2	○				SED5H-*ESc-017
		Presentation Practice in a conference on Earth Sciences A		1	1		○			SED5H-*ESc-018
		Presentation Practice in a conference on Earth Sciences B		1	2		○			SED5H-*ESc-019
	Chemistry	Advanced Solid State Inorganic Chemistry A		1	1 / 2		○	6 Credits or more		SED5H-*CHe-001
		Advanced Solid State Inorganic Chemistry B		1	1 / 2		○		Every other year	SED5H-*CHe-002
		Advanced Quantum Chemistry A		1	1 / 2	○				SED5H-*CHe-003
		Advanced Quantum Chemistry B		1	1 / 2	○			Every other year	SED5H-*CHe-004
		Chemical Kinetics and Dynamics		1	1 / 2		○		Every other year	SED5H-*CHe-005
		Solid State Properties		2	1 / 2		○			SED5H-*CHe-006
		Advanced Chemistry of Electronic Properties		2	1 / 2		○		Every other year	SED5H-*CHe-007
		Advanced Bio-Analytical Chemistry A		1	1 / 2		○		Every other year	SED5H-*CHe-008
		Advanced Bio-Analytical Chemistry B		1	1 / 2		○		Every other year	SED5H-*CHe-009
		Advanced Organic Analytical Chemistry A		1	1 / 2	○			Intensive	SED5H-*CHe-010
		Advanced Organic Analytical Chemistry B		1	1 / 2	○			Intensive	SED5H-*CHe-011
		Advanced Organic Chemistry A		1	1 / 2	○			Every other year	SED5H-*CHe-012
		Advanced Organic Chemistry B		1	1 / 2	○			Every other year	SED5H-*CHe-013
		Advanced Organic Chemistry C		1	1 / 2		○		Every other year	SED5H-*CHe-014
		Advanced Organic Chemistry D		1	1 / 2		○		Every other year	SED5H-*CHe-015
		Bioenergetics		2	1 / 2		○		Every other year	SED5H-*CHe-016
		Advanced Nucleic Acid Chemistry		2	1 / 2	○			Every other year	SED5H-*CHe-017
		Advanced Biomolecular Science		2	1 / 2	○				SED5H-*CHe-018
		Quantitative Environmental Analytical Chemistry		2	1 / 2	○				SED5H-*CHe-019
		Environmental Behavior of Toxic Chemicals		2	1 / 2		○		Every other year	SED5H-*CHe-020
	Biology	Plant Cell Structure and Function		2	1 / 2	○		6 Credits or more	Every other year	SED5H-*BIO-001
		Functional Plant Physiology		2	1 / 2	○			Every other year	SED5H-*BIO-002
		Mechanisms of Development		2	1 / 2	○			Every other year	SED5H-*BIO-003
		Evolutionary Morphology		2	1 / 2		○		Every other year	SED5H-*BIO-004
		Molecular and Functional Biology		2	1 / 2		○		Every other year	SED5H-*BIO-005
		Aquatic Ecology		2	1 / 2	○			Every other year	SED5H-*BIO-006
		Evolutionary Ecology		2	1 / 2	○			Every other year	SED5H-*BIO-007
		Environmental Molecular Toxicology		2	1 / 2		○		Every other year	SED5H-*BIO-008
		Aquatic Microbiology		2	1 / 2		○		Every other year	SED5H-*BIO-009
		Bioinformatics		2	1 / 2		○		Every other year	SED5H-*BIO-010
		Advanced Research in Biology A		2	1	○				SED5H-*BIO-011
		Advanced Research in Biology B		2	2	○				SED5H-*BIO-012

Degree: Master of Science

Requirements for Completing the Natural Science Master's Program

Acquire at least 30 credits, including the requirements listed below, complete the master's thesis review, and pass the final exam.

(1) 7 compulsory credits from the Common Subjects of the Master's Program

(2) 12 credits or more from the Subjects of Natural Science

(3) 6 credits or more from the Specialized Subjects in the studied field.

(Notes:

1. Credits earned in other programs in the Graduate School of Science and Engineering or in subjects offered by other graduate schools may be added to the requirements for completion.
2. [1/2] indicates the subject can be taken any year.
3. Working adult students may take subjects by "Special Exception for Educational Methods". Please inquire if this applies to you.

F. Special Graduate Program on Disaster Mitigation Study for Asian Students

DP - Educational Program Chart　(Special Graduate Program on Disaster Mitigation Study for Asian Students)

	Special Graduate Program on Disaster Mitigation Study for Asian Students	DP1:＜Advanced expertise and academic knowledge＞ Students possess advanced expertise, skills, and ethical standards that enable them to independently conduct research and development activities in the field of disaster prevention and mitigation of natural disasters in developing countries.	DP2:＜Research and development ability＞ Students have the ability to analyze the essence of various issues in society based on their own academic knowledge, take the lead in solving these issues through the process of advanced research, study and development, and disseminate the results of their work.	DP3:＜Social involvement＞ Students have the ability to discuss and evaluate the roles and responsibilities of science and technology from perspectives of society, culture and the global environment as individuals involved in the dissemination and utilization of science and technology.
Common Subjects of the Master's Program	Advanced Research Ethics	○		◎
	English in Science and Technology	○	◎	
	Academic Presentation		◎	○
	Mater Research 1,2	◎	◎	○
Specialized Subjects	Disaster Risk and Reduction Engineering	◎		
	Principle of Infrastructure Design	◎		
	Practical Asset Management	◎	○	
	Numerical Simulation of Solid Mechanics	◎		
	Simulation of Environmental Dynamics	◎		○
	New Energy and Urban Design	○	◎	◎
	Biodiversity and Human Activities	◎		○
	Behavioral Science for Infrastructure Planning	◎	○	○
	Systems Engineering	◎		
	Regional Management	◎	○	○
	Public Governance	◎	○	○
	Combustion	◎		
	Strength and Fracture of Materials	◎		
	Modern Control Theory	◎		
	Seminar on Distributed System	◎		
	Internship		◎	◎
	Seminar A on Asian Disaster Prevention	◎	○	○
	Seminar B on Asian Disaster Prevention	◎	○	○
	Advanced Seminar on Disaster Management Study	◎	○	○

Master's Program of the Graduate School of Science and Engineering (Special Graduate Program on Disaster Mitigation Study for Asian Students)

Category	Subcategory	Subject	Credits		Student Year	Semester		Required Credits	Note	Subject code
			Compulsory	Elective		Spring	Fall			
Common Subjects of the Master's Program		Advanced Research Ethics	1		1	○		7	s	SEE5F-**-001
		English in Science and Technology	1		1 / 2	○			Intensive	SEE5F-**-002
		Academic Presentation	1		1 / 2	○			Intensive	SEE5F-**-003
		Master Research 1	2		1	○				SEE5F-**-004
		Master Research 2	2		2	○				SEE5F-**-005
Specialized Subjects		Disaster Risk Reduction Engineering		2	1	○		A minimum of 23 credits including the required subjects.		SEE5H-*SGP-001
		Principle of Infrastructure Design		2	1		○			SEE5H-*SGP-002
		Practical Asset Management		2	1	○				SEE5H-*SGP-003
		Numerical Simulation of Solid Mechanics		2	1		○			SEE5H-*SGP-004
		Simulation of Environmental Dynamics		2	1		○			SEE5H-*SGP-005
		New Energy and Urban Design		2	1		○			SEE5H-*SGP-006
		Biodiversity and Human Activities		2	1	○				SEE5H-*SGP-007
		Behavioral Science for Infrastructure Planning		2	1	○				SEE5H-*SGP-008
		Systems Engineering		2	1	○				SEE5H-*SGP-009
		Regional Management		2	1	○				SEE5H-*SGP-010
		Public Governance		2	1		○			SEE5H-*SGP-011
		Combustion		2	1 / 2		○		Every other year	SEE5H-*SGP-012
		Strength and Fracture of Materials		2	1 / 2	○			Every other year	SEE5H-*SGP-013
		Modern Control Theory		2	1 / 2		○		Every other year	SEE5H-*SGP-014
		Seminar on Distributed System		2	1	○				SEE5H-*SGP-015
		Internship		1	1 / 2	○			Intensive	SEE5H-*SGP-016
		Seminar A on Asian Disaster Prevention	4		1	○				SEE5H-*SGP-017
		Seminar B on Asian Disaster Prevention	4		2	○				SEE5H-*SGP-018
		Advanced Seminar on Disaster Management Study	2		2	○				SEE5H-*SGP-019

Degree: Master of Engineering

Requirements for Completing the Special Graduate Program on Disaster Mitigation Study for Asian Students Master's Program

Acquire at least 30 credits, including the requirements listed below, complete the master's thesis review and pass the final exam.

(1) 7 compulsory credits from the Common Subjects of the Master's Program

(2) 23 credits or more from the Specialized Subjects

Notes:

1. Credits earned in other programs in the Graduate School of Science and Engineering or in subjects offered by other graduate schools may be added to the requirements for completion.
2. [1/2] indicates the subject can be taken any year.
3. Working adult students may take subjects by "Special Exception for Educational Methods". Please inquire if this applies to you.

G. Regional Engineer Development Program

DP - Educational Program Chart (Regional Engineer Development Program)

		Regional Engineer Development Program	DP1:＜Advanced expertise and academic knowledge＞ Students possess advanced expertise, skills and ethical standards for research implementation that enable them to independently conduct research and development activities in the field of the regional technology-based industries.	DP2:＜Research and development ability＞ Students have the ability to analyze the essence of various issues in society based on their own academic knowledge and a broad perspective, take the lead in solving these issues through the process of advanced research, study and development, and disseminate the results of their work.	DP3:＜Social involvement＞ Students have the ability to discuss and evaluate the roles and responsibilities of science and technology from diverse perspectives of society and the environment as individuals involved in the dissemination and utilization of science and technology.
Common Subjects of the Master's Program		Advanced Research Ethics	○		◎
		English in Science and Technology	○	◎	
		Academic Presentation		◎	○
		Mater Research 1,2	◎	◎	○
Common Subjects of Industrial Science and Technology, and Public Infrastructure	Management Fundamental Subjects	Advanced Data Science	○	◎	◎
		Advanced Seminar on SDGs	○	◎	◎
		Internship		◎	◎
		Safety and Health Management		○	◎
		Basics for Management of Chemicals		○	◎
		Leadership Theory and Practice		◎	○
		Project Management		◎	○
		Advanced Management of Technology		○	◎
		Advanced Mathematics 1A, 1B	◎		
		Advanced Mathematics 2A, 2B	◎		
		Toward the Realization of an Inclusive Society			◎
Specialized Subjects	Field Fundamental Subjects	Sensing and Applications	◎	○	○
		Introduction to Regional Industry Engineering	◎	○	○
		On-the-spot Survey 1	○	◎	○
		On-the-spot Survey 2	○	◎	○
	Self Design Subjects	Introduction to Reliability Engineering	◎	○	○
		Introduction to Safety Engineering	◎	○	○
		Introduction to Automatic Control	◎		
		Introduction to Naval Architecture and Ocean Engineering	◎		
	Practical Subjects	Regional Cooperation Project Research 1	◎	◎	○
		Regional Cooperation Project Research 2	◎	◎	○
		Practical Work Experience in Regional Industry		◎	◎

Master's Program: Regional Engineer Development Program, Graduate School of Science and Engineering

Category	Subcategory	Subject	Credits		Student Year	Semester		Required Credits	Note	Subject code
			Compulsory	Elective		Spring	Fall			
Common Major Subjects		Advanced Research Ethics	1		1	○		7	Intensive	SEF5F-**-001
		English in Science and Technology	1		1/2	○			Intensive	SEF5F-**-002
		Academic Presentation	1		1/2	○			Intensive	SEF5F-**-003
		Master Research 1	2		1	○				SEF5F-**-004
		Master Research 2	2		2	○				SEF5F-**-005
Common Program Subjects	Fundamental Management Subjects	Advanced Data Science		1	1	○		2 Credits or more		SEF5G-**-001
		Advanced Seminar on SDGs		1	1	○				SEF5G-**-002
		Internship		1	1/2	○			Intensive	SEF5G-**-003
		Safety and Health Management		1	1	○				SEF5G-**-004
		Basics for Management of Chemicals		1	1/2	○			Intensive	SEF5G-**-005
		Leadership Theory and Practice		1	1		○			SEF5G-**-006
		Project Management		1	1	○				SEF5G-**-007
		Advanced Management of Technology		1	2	○				SEF5G-**-008
		Advanced Mathematics 1A		2	1	○				SEF5G-**-009
		Advanced Mathematics 1B		2	1	○				SEF5G-**-010
		Advanced Mathematics 2A		2	1		○			SEF5G-**-011
		Advanced Mathematics 2B		2	1		○			SEF5G-**-012
		Toward the Realization of an Inclusive Society		1	1/2		○			SEF5G-**-013
Specialized Subjects	Fundamental Field Subjects	Sensing and Applications	2		1	○		16 Credits or more		SEF5H-*RED-001
		Introduction to Regional Industry Engineering	2		2	○				SEF5H-*RED-002
		On-the-spot Survey 1	1		1		○		Intensive	SEF5H-*RED-003
		On-the-spot Survey 2	1		2		○		Intensive	SEF5H-*RED-004
	Self-designed Subjects	Introduction to Reliability Engineering	2		1/2	○				SEF5H-*RED-005
		Introduction to Safety Engineering	2		1/2		○			SEF5H-*RED-006
		Introduction to Automatic Control		2	1/2	○				SEF5H-*RED-007
		Introduction to Naval Architecture and Ocean Engineering		2	1/2		○			SEF5H-*RED-008
	Practical Subjects	Regional Cooperation Project Research 1	2		1		○			SEF5H-*RED-009
		Regional Cooperation Project Research 2	2		2		○			SEF5H-*RED-010
		Practical Work Experience in Regional Industry	2		1	○			Intensive	SEF5H-*RED-011

Degree: Master of Engineering

Requirements for Completing the Regional Engineer Development Master's Program

Acquire at least 30 credits, including the requirements listed below, complete the Master's thesis review and pass the final exam.

(1) 7 compulsory credits from the Common Subjects of the Master's Program

(2) 2 credits or more from the Common Subjects of Industrial Science and Technology, and Public Infrastructure

(3) 16 credits or more from the Specialized Subjects

Note:

1. Credits earned in other programs in the Graduate School of Science and Engineering or in subjects offered by other graduate schools may be added to the requirements for completion.
2. [1/2] indicates the subject can be taken any year.
3. Working adult students may take subjects by "Special Exception for Educational Methods". Please inquire if this applies to you.

H. Doctoral Program

DP - Educational Program Chart　(Doctoral Program including Special Graduate Program on Disaster Mitigation Study for Asian Students)

	Doctoral Program	DP1:＜Highly sophisticated expertise and knowledge＞ Students possess highly sophisticated expertise and academic knowledge based on a wide range of comprehensive skills that enable them to conduct pioneering research and development activities to pave the way for science and technology in the field of disaster prevention and mitigation of natural disasters in developing countries or related fields.	DP2:＜Highly sophisticated problem-seeking and problem-solving skills＞ Students have the ability to explore, solve or lead the solution of novel and original issues with firm ethical standards as autonomous researchers.	DP3:＜Broad perspective＞ Students possess a broad perspective that allows them to look at society and science and technology from multiple perspectives, based on their own academic knowledge and education.	DP4:＜Social contribution＞ Students have the ability to contribute to society and environmental issues as autonomous researchers and engineers broadly involved from the aspects of science and technology.
Common Subjects of the Doctoral Program	Fundamental Academic Skills	○		◎	◎
	Advanced Academic Skills	○		◎	◎
	Career-Path Development		○	◎	○
	Advanced Off-campus Exercises	○	◎	○	○
	Advanced Off-campus Training	○	◎	○	○
	International Exchange Research	○	○	◎	◎
	Research Internship		◎	◎	◎
Specialized Subject	Doctoral Research	◎	◎	○	○

Doctoral Program, Graduate School of Science and Engineering

Category	Subject	Credits		Student Year	Required Credits	Note	Subject code
		Compulsory	Elective				
Common Subjects of the Doctoral Program	Fundamental Academic Skills		1	1	3 or more	Intensive	SEG(H)7F-**-001
	Advanced Academic Skills		1	1 / 2 / 3		Intensive	SEG(H)7F-**-002
	Career-Path Development		1	1 / 2 / 3		Intensive	SEG(H)7F-**-003
	Advanced Off-campus Exercises		1	1 / 2 / 3		*1	SEG(H)7F-**-004
	Advanced Off-campus Training		1	1 / 2 / 3		*1	SEG(H)7F-**-005
	International Exchange Research		1	1 / 2 / 3		*2	SEG(H)7F-**-006
	Research Internship		1	1 / 2 / 3		Intensive	SEG(H)7F-**-007
Specialized Subject	Doctoral Research	9		1～3	9		SEG(H)7H-**-001

Degree: Doctor of Science or Doctor of Engineering or Doctor of Philosophy in Mathematics and Computer Science

Requirements for Completing the Doctoral Program

1. 12 credits or more, including: 9 compulsory credits from the Specialized Subject and 3 or more elective credits from the Common Subjects of the Doctortal Program.
2. Complete the doctoral dissertation review and pass the final exam.

(Note) The years subjects are offered

1～3: taken in the first through third year

1 / 2 / 3: can be taken any year

V. EU Advanced Research Fellowship

Doctoral course students play a valuable role in scientific innovation for the next generation. However, in recent years the number of students entering doctoral courses in Japan has decreased. The EU Advanced Research Fellowship was established by Ehime University with support from MEXT to provide financial and academic support and career guidance to encourage outstanding master's students to enter its doctoral programs.

1. Selection
   The Graduate School of Science and Engineering selects six students every year based comprehensively on their research plan, academic record, research achievements, and economic situation.
2. Student Support
   The students will be provided with an environment that will enable them to focus on their research.
   *They will receive a monthly stipend and annual research funding for three years.
   Compulsory Subjects
   1) Fundamental Academic Skills
      A balanced program for acquiring the skills needed for presenting and communicating at an international level, including English language skills.
   2) Advanced Academic Skills
      A comprehensive program will enable the student to acquire a broad perspective through seminars in different fields and exchange with leading researchers to explore and solve problems, as well as the ability to obtain external funding.
   3) Career Path Development
      Be involved with various stakeholders and organizations to acquire management skills. Learn to present your work in designing for the challenges of the future.
   4) Research Internship
      Participate in problem-solving research projects in companies, research institutions and other situations in order to understand the social significance of research and to be able to contribute to society and industry.
   Other activities
      Learn to evaluate your own research/work capacities, and interact with administration and faculty members. Periodic reporting of research activities to your academic advisors and Fellowship coordinators. Research ethics education.
   Career Path Support
      An assistant professor mentoring system, support in matching academic posts to secure research & development positions in the private sector.