Handbook for Students

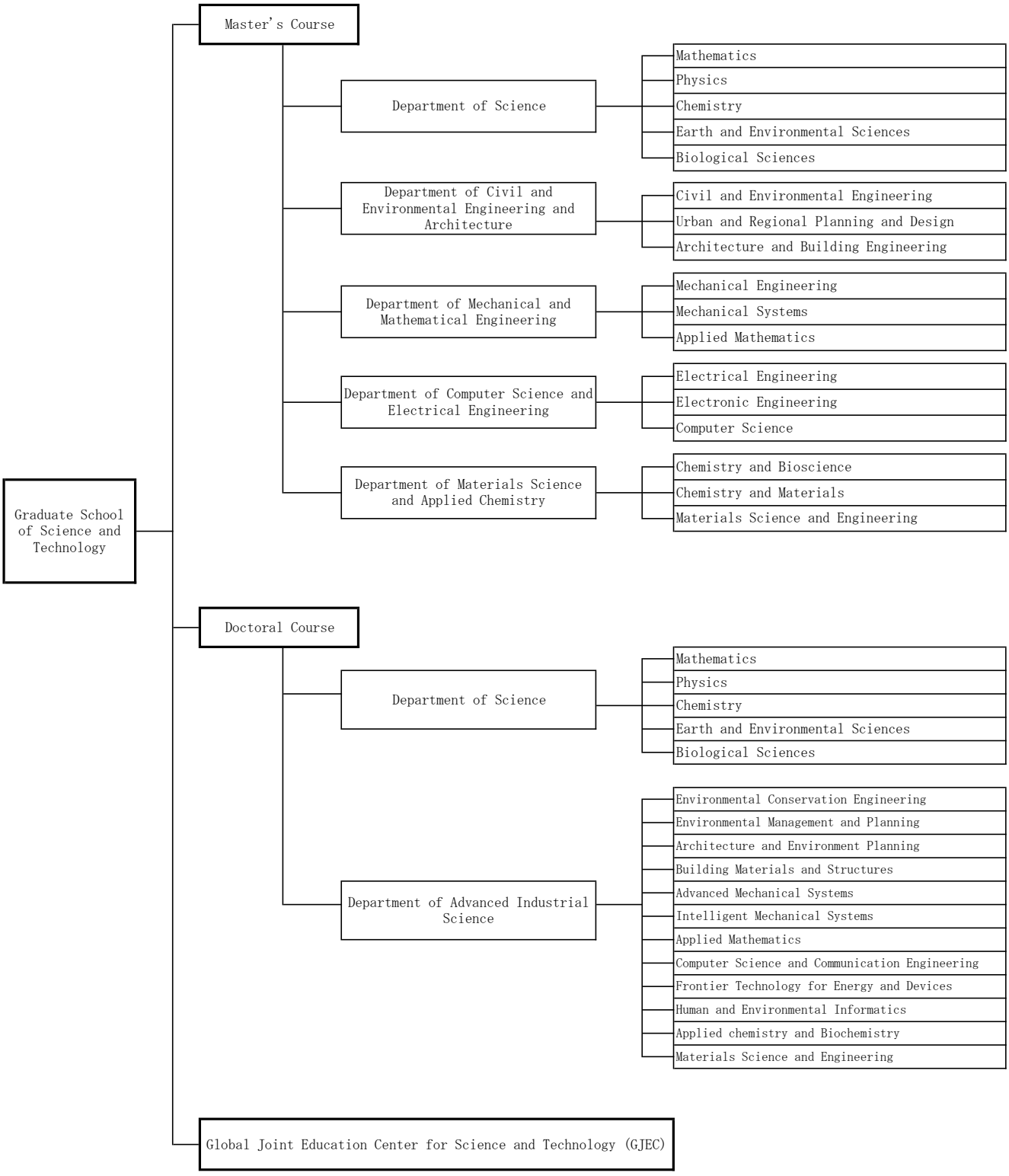
2023

Graduate School of Science and Technology

Kumamoto University

Index

Graduate School of Science and Technology Organization Chart



Requirements for completion of Master's Course

Requirements for completion of Master's Course shall be: to (i) stay in the Master's Course for two or more years, (ii) acquire 31 credits or more from lecture subjects provided in individual courses and educational programs, and (iii) pass the master's thesis examination and final exam after receiving the required research guidance. However, concerning lecture subjects, if so allowed in courses or educational programs with which the student is affiliated, lecture subjects may be taken in other courses or educational programs of this Graduate School of Science and Technology, other graduate schools of the University, or graduate schools of other universities, and the credits may be certified as credits toward the requirements for completion, up to a maximum of 10 credits (see Regulations of Graduate School of Science and Technology Kumamoto University: https://www.fast.kumamoto-u.ac.jp/gsst/kisoku/) Moreover, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient (see Arrangements for Exceptional Cases of Length of Course of Study at the Graduate School of Science and Technology Kumamoto University: https://www.fast.kumamoto-u.ac.jp/gsst/kisoku/).

[Evaluation standards for examination of master's thesis for Master's Course]

(Examination System)

Examination of academic dissertations shall be performed by consultations by examiners, which consist of one chief examiner and two or more assistant examiners.

(Evaluation Standards)

The following points must be all satisfied:

1. Definition of issues

Clear consciousness of the issues, and the significance and necessity of research to resolve the issues are stated.

2. Proper treatment of preceding studies and data

In addition to ascertaining and referring to preceding studies and data in the relevant field, the positioning of research based thereon is clear.

3. Appropriateness of research method

A research method appropriate to the objectives of research is used.

4. Appropriateness and significance of demonstrational process and conclusion

Thrust of argument from setting of issues, analysis, results and consideration is clear and consistent.

5. Appropriateness of construction, expression and notation of thesis

Use of language and sentence wording is appropriate to an academic thesis.

6. Contribution to academia or society

The thesis has either a certain degree of novelty or originality academically, or has a possibility of responding to the demands of society.

7. Communication ability

The writer can orally present the results of research properly and logically.

[Research ethics education]

Though this is not a requirement for completion, students are obligated to take lessons in research ethics education materials by e-learning (eL-CoRE or CITIJAPAN). IDs and passwords for taking the course will be issued so students must take the course without fail.

(See Guidelines for Implementation of Research Ethics Education (published on the website of the University).

Standards for degree conferral and road map for degree acquisition

○ **Department of Science: Course of Mathematics**

Standards for degree conferral

1) In addition to special research (4 credits) which is a required subject among the common subjects, it is necessary to acquire a total of 16 credits in the required four subjects of the Course of Mathematics, and a total of 11 or more credits in elective subjects, for a total 31 credits or more altogether. Among these 31 credits, only 1 credit in Advanced General Education out of Subjects for Science and Technology shall be accepted as credit towards the requirements for completion.
2) Give a presentation on research at a Master's Thesis Presentation Meeting, undergo the oral exam, and submit a master's thesis.

Road map for acquisition of degree

(First year)

- Acquire 11 or more credits in elective subjects
- Determine topic of master's thesis, and learn the basics of research
- Master searching of literature necessary for research, how to read literature, and how to write papers, etc., through lab seminars.

(Second year)

- Advance research for master's thesis
- Give a presentation on research results at an academic conference, etc.

○ **Department of Science: Course of Physics**

Standards for degree conferral

In order to complete Course of Physics and acquire a degree (MA), in addition to special research (4 credits) which are required subjects among the common subjects, it is necessary to acquire 16 credits from the four required subjects of Course of Physics, and acquire a total of 31 credits or more, together with acquisition of a total 11 or more credits in elective subjects. Moreover, it is necessary to give a presentation on research at a Master's Thesis Presentation Meeting and undergo an oral exam, and submit a master's thesis, and pass the thesis examination.

Required subjects among Course of Physics are: Special Seminar on Physics I, Special Seminar on Physics II, Seminar on Physics I, and Seminar on Physics II, 4 credits each. In addition, as for Advanced General Education course subjects of Subjects for Science and Technology, only 1 credit shall be accepted as credit for the requirements for completion.

Students must possess a spontaneous spirit of inquiry, logical thinking ability, and the ability to find, solve and express issues in the process of preparation for the master's thesis.

Road map for acquisition of degree

(First year)

- Acquire 11 credits in elective subjects
- Take Special Seminar on Physics I and Seminar on Physics I.

- Determine topic of master's thesis, and learn the basics of research
- Master searching of literature necessary for research, how to read literature, and how to write papers, etc., through lab seminars.

(Second year)

- Take Special Seminar on Physics II and Seminar on Physics II.
- Advance research for master's thesis
- Give a presentation of research results in Seminar on Physics II or at an academic conference, etc.
- Give a presentation on research at a Master's Thesis Presentation Meeting and submit the master's thesis.

○ **Department of Science: Course of Chemistry**

Standards for degree conferral

It is necessary to acquire 4 credits from Studies in Science on all courses subjects, 4 credits from Special Seminar on Chemistry I, 4 credits from Special Seminar on Chemistry II, 4 credits from Seminar on Chemistry I and 4 credits from Seminar on Chemistry II out of the Chemistry Course subjects, for a total of 20 credits, and in addition, it is necessary to acquire a total of 11 or more credits from elective subjects out of Subjects for Science and Technology and Major subjects, for a total of 31 credits or more altogether. However, as for Advanced General Education out of Subjects for Science and Technology, only 1 credit shall be accepted as credit toward the requirements for completion. Upon completion, it is necessary to submit the master's thesis, undergo Thesis Review by the examination committee, give an oral presentation at the Master's Thesis Presentation Meeting and undergo an oral exam. Students must augment or revise the master's thesis based on the reviewer's opinions and oral exam, etc., and submit the thesis by the deadline separately specified, by uploading to the e-Learning platform (Moodle).

As to whether or not the student is to pass the degree examination, based on the appraisal of the oral exam and submitted master's thesis, a draft is created at a Course of Chemistry Meeting, and then deliberations are conducted at a faculty meeting of the Graduate School of Science and Technology, to judge the results.

Road map for acquisition of degree

Use all of the time when there are no lectures or seminars for research on the master's thesis.

(First year)

- Acquire a total 16 credits or more from Special Seminar on Chemistry I, Seminar on Chemistry I and elective subjects.
- Give a presentation on progress of research at an interim report meeting hosted by Course of Chemistry.

(Second year)

- Acquire 31 credits or more from Special Seminar on Chemistry II, Seminar on Chemistry II, Studies in Science and elective subjects, together with the credits acquired in the first year.
- Give a presentation on research results at an academic conference, etc.

○ **Department of Science: Course of Earth and Environmental Sciences**

Standards for degree conferral

After acquiring credits as requirements for completion in the Master's Course, it is necessary to pass

Thesis Review and the final exam. Based on the augmented and revised master's thesis after undergoing the oral exam at a Presentation Meeting, a draft of success or failure of degree examination is created at the Course Meeting, and a judgment on the performance appraisal is made, then deliberations are conducted at a faculty meeting of the Graduate School of Science and Technology, to judge the results. Upon judgment of the results, the master's thesis and presentation thereof shall have contents that are judged to have attained the level suitable for an MA degree, and the author shall be possessed of basic ability and skills as a researcher or high-level professional.

As credits toward the requirements for completion of Course of Earth and Environmental Sciences, it is necessary to acquire 4 credits in Studies in Science as a required subject among the common subjects, 8 credits in the required subjects Special Seminar on Earth and Environmental Sciences I and II, 8 credits in Seminar on Earth and Environmental Sciences I and II, and 11 or more credits from among the elective subjects in Earth and Environmental Sciences related subjects and Advanced General Education, for a total 31 of credits or more. In addition, as for Advanced General Education from Subjects for Science and Technology, only 1 credit shall be accepted as credit toward the requirements for completion.

For acquisition of credits for Special Research, it is necessary to submit the master's thesis and undergo an oral exam at a Presentation Meeting. For acquisition of credits for Special Seminar on Earth and Environmental Sciences I, II and Seminar on Earth and Environmental Sciences I, II, it is necessary to give presentations and discussions on daily basis in research lab seminars, etc., as well as summarize and submit seminar report.

Road map for acquisition of degree

(First year)

- Through taking the elective subjects of the Master's Course, gain basic knowledge of the Earth and Environmental Sciences field broadly, as well as deepen specialized knowledge with respect to fields related to the topic of the master's thesis.
- Based on discussions with the Supervisors, formulate a research plan and start on necessary surveys and studies.
- Master methods of searching of literature necessary for research, data analysis, methods of discussion and presentation, etc., through lab seminars, etc.
- Survey the literature related to the student's own research topic, compile and submit the background thereof, the current status of research and the direction of own research as a seminar report.

(Second year)

- Gain deeper knowledge as necessary by taking elective subjects.
- Continue research on the master's thesis and give a presentation on research results at an academic conference, etc. depending on progress.
- Submit the final research results as the master's thesis, and give a presentation on the contents thereof at the Master's Thesis Presentation Meeting.

○ **Department of Science: Course of Biological Sciences**

Standards for degree conferral

In order to complete Course of Biological Sciences and acquire the Master's Degree (Science), it is necessary to acquire 4 credits from Studies in Science as required subjects on common subjects, and in

addition, 16 credits from required subjects out of the Course subjects, of Seminar on Biological Sciences I and II and Special Seminar on Biological Sciences I and II, as well as a total of 11 credits or more from elective subjects out of Subjects for Science and Technology and Major subjects, for a total of 31 credits or more altogether. In addition, as for Advanced General Education from Subjects for Science and Technology, only 1 credit shall be accepted as credit toward the requirements for completion. For Studies in Science, in addition to the Supervisors, a Supervisor Committee that consists of multiple (two to three) supervisors shall be set up and the students must report on the status of progress of research at a Committee meeting at least once a year. Submit the final research results as master's thesis, and give a presentation on the contents thereof at the Master's Thesis Presentation Meeting. Via the oral exam at the Presentation Meeting, a draft is created at the Course Meeting, and then deliberations are conducted at a faculty meeting of the Graduate School of Science and Technology, to judge on whether or not the student is to pass the degree examination.

Road map for acquisition of degree

(First year)

- Take Seminar on Biological Sciences I and Special Seminar on Biological Sciences I.
- Acquire 11 or more credits in elective subjects. Of which elective subjects to take shall be determined upon consultations with the Supervisors.
- Conduct research according to a topic determined upon discussions with the Supervisors.
- Report on status of progress of research at the Supervisor Committee meeting.

(Second year)

- Take Seminar on Biological Sciences II and Special Seminar on Biological Sciences II.
- Report on status of progress of research at the Supervisor Committee meeting.
- Give a presentation on research results at an academic conference, etc.
- Submit the master's thesis, and give oral presentation at Master's Thesis Presentation Meeting.

○ **Department of Civil and Environmental Engineering and Architecture: Education Program for Civil and Environmental Engineering**

Standards for degree conferral

In order to complete Education Program for Civil and Environmental Engineering of the Department of Civil and Environmental Engineering and Architecture and acquire the Master's Degree (Engineering), the following standards must be satisfied:

1) (Period of attendance at school) Period of attendance at school shall be 2 years or longer, or 1 year or longer for a student who is eligible for application of a special exception for length of the course of study.
2) (Credits acquisition) Students must acquire 31 credits or more, including 12 credits of required subjects on this Education Program and 10 credits from elective subjects out of Special Basic subjects. However, as for Advanced General Education, only 1 credit of elective required subjects shall be accepted as credit toward the requirements for completion.
3) (Implementation of research) Students must conduct research voluntarily throughout the period of attendance at school under the guidance of the Supervisor who is affiliated with the Education Program and the Supervisor Committee that consists of three or more faculty members who are affiliated with

the Major and includes the Supervisor.

4) (Interim report) Students must give an interim report to the Research Supervisor Committee on the status of research activities at the end of each school year.
5) (Master's thesis) Students must submit the final research results as a master's thesis to the Research Supervisor Committee by the prescribed due date.
6) (Final exam) Students must undergo examination by the review committee for the submitted master's thesis and pass the final exam (oral exam).
7) (Judgment on pass or rejection) Judgment on whether or not the student passes the final exam will be made by the review committee, which consists of one chief examiner and two or more assistant examiners, and upon report thereby, deliberations are conducted at a faculty meeting of the Graduate School of Science and Technology, to judge the results.
8) (Application of special exception for length of the course of study) The above-stated processes shall apply likewise to a student subject to application of special exception for length of the course of study by achieving excellent results. Nonetheless, the interim report under Paragraph 4) may be replaced with the final test under Paragraph 6).

Road map for acquisition of degree

(First year)

- Have interview with the faculty member from whom the student desires guidance promptly and create a research plan after entering the Education Program, in order to receive proper research guidance based on the research plan.
- In performance of research, use at least 80 hours or longer for actual research activities, and moreover 40 hours or more for presentation (including debate) on research results. [Research and Scholarly Activity on Civil Engineering I]
- It is desirable for students to create a study plan, and acquire 27 credits or more including all required Major subjects of the Education Program and Advanced General Education (1 credit from elective required subjects) except for Research and Scholarly Activity on Civil Engineering II and Civil and Environmental Engineering Seminar II (subjects for second year). As for elective subjects, acquire 18 credits or more including 10 credits or more from Major subjects of the Education Program, together with other lecture subjects (subjects available for all Departments, other graduate school subjects, etc.).
- As for lecture subjects, pass the test that will be carried out at the end of the semester when the lecture is completed, or at the end of the school year.
- Give interim report to the Supervisor Committee on status of research activities at end of first school year.

(Second year)

- Continue to acquire credits by taking lecture subjects and acquire 31 credits or more including 12 credits of Major subjects required from all Education Programs by the end of the second year.
- In performance of research, use at least 90 hours or longer for actual research activities, and moreover 30 hours or more for presentation (including debate) on research results. [Research and Scholarly Activity on Civil Engineering II]
- Submit the final research results as master's thesis to the Supervisor Committee by the prescribed due date.

○ **Department of Civil and Environmental Engineering and Architecture: Education Program for Urban and Regional Planning and Design**

Standards for degree conferral

In order to complete Education Program for Urban and Regional Planning and Design of the Department of Civil and Environmental Engineering and Architecture and acquire the Master's Degree (Engineering), following standards must be satisfied.

1) (Period of attendance at school) Period of attendance at school shall be 2 years or longer, or 1 year or longer for a student who is eligible for application of a special exception for length of the course of study.
2) (Credits acquisition) Students must acquire 31 credits or more, including 12 credits of required subjects on this Education Program and 10 credits from elective subjects out of Special Basic subjects. However, as for Advanced General Education, only 1 credit of elective required subjects shall be accepted as credit toward the requirements for completion.
3) (Implementation of research) Students must conduct research voluntarily throughout the period of attendance at school under the guidance by Major supervisor who is affiliated with the Education Program and the Supervisor Committee that consists of three or more faculty who are affiliated with the Major including the Major supervisor.
4) (Interim report) Students must give interim report to the Supervisor Committee on status of research activities at end of each school year.
5) (Master's thesis) Students must submit the final research results as master's thesis to the Supervisor Committee by the prescribed due date.
6) (Final exam) Students must undergo examination by review committee for the submitted master's thesis and pass the final exam (oral test).
7) (Judgment on pass or rejection) Judgment on whether or not the student passes the final exam will be made by the review committee, which consists of one chief examiner and two or more assistant examiners, and upon report thereby, deliberations are conducted at a faculty meeting of the Graduate School of Science and Technology, to judge the results.
8) (Application of special exception for length of the course of study) The above-stated processes shall apply likewise to a student subject to application of special exception for length of the course of study by achieving excellent results. Nonetheless, the interim report under Paragraph 4) may be replaced with the final test under Paragraph 6).

Road map for acquisition of degree

(First year)

- Have interview with the faculty member from whom the student desires guidance promptly and create a research plan after entering the Education Program, in order to receive proper research guidance based on the research plan.
- In performance of research, use at least 80 hours or longer for actual research activities, and moreover 40 hours or more for presentation (including debate) on research results. [Research and scholarly Activity on Regional Design I]

- It is desirable for students to create a study plan, and acquire 27 credits or more including all required Major subjects of the Education Program and the Advanced General Education (1 credit from elective required subjects) except for Research and scholarly Activity on Regional Design II and Urban and Regional Design Seminar II (subjects for second year). As for elective subjects, acquire 18 credits or more including 10 credits or more from Major subjects of the Education Program, together with other lecture subjects (subjects available for all Departments, other graduate school subjects, etc.).
- As for lecture subjects, pass the test that will be carried out at end of the semester when the lecture is completed, or at end of the school year.
- Give interim report to the Supervisor Committee on status of research activities at end of first school year.

(Second year)

- Continue to acquire credits by taking lecture subjects and acquire 31 credits or more including 12 credits of Major subjects required from all Education Programs by the end of the second year.
- In performance of research, use at least 90 hours or longer for actual research activities, and moreover 30 hours or more for presentation (including debate) on research results. [Research and scholarly Activity on Regional Design II]
- Submit the final research results as master's thesis to the Supervisor Committee by the prescribed due date.

○ **Department of Civil and Environmental Engineering and Architecture: Education Program for Architecture and Building Engineering**

Standards for degree conferral

Requirements for completion of Master's Course shall be: to (i) stay in the Master's Course for two or more years, (ii) acquire total 31 credits or more including 22 credits of elective subjects of the Education Program for Architecture and Architecture Urban Culture, or a total of 31 credits or more including 16 required credits and 6 credits of elective subjects of the Education Program for the Architecture Design and (iii) pass the master's thesis・Master's Project examination and final exam after receiving the required research guidance.

Road map for acquisition of degree

In Architecture, acquire credits from the lecture subjects of each of the specialized field of structures, environment and planning, and seminar subjects. In addition, integrate disparate knowledge and link it to creative activities through Research Practicum in Architecture and Building Science I to IV. Moreover, under the guidance of the Supervisor, start on formulation of a research plan and research, submit the master's thesis, and give an oral presentation at the Master's Thesis Examination Meeting on the contents thereof.

In Architectural Design, there is emphasis on architectural design subjects, and in place of Research Practicum in Architecture and Building Science I to IV and master's thesis, acquire credits in Architectural Studio work II to IV, and Master's Project.

In the Architecture and Urban Culture, first learn the basics of Architecture and Building Engineering through Basic subjects of Architecture, cities and culture, No.1 to 3, where students can choose undergraduate lecture subjects, and then work on specialized research.

(First year)
- Through taking the Master's Course, learn expert knowledge of Architecture and Building Engineering broadly, as well as deepen knowledge with respect to fields related to the topic of the master's thesis and Master's Project.
- Based on discussions with the Supervisors, formulate research plan and start on research.
- Master searching of literature necessary for research, how to read literature, how to make logical arguments, how to write as required for the thesis, methodologies and techniques required for design, and presentation methods, etc., through lab seminars.

(Second year)
- Acquire all the credits necessary for completion of Education Program for Architecture and Building Engineering.
- Give a presentation on research results at an academic conference, etc.
- Submit the final research results as the master's thesis or master's design by the deadline, and give a presentation on the contents thereof at the Master's Thesis and Design Examination Meeting.

○ **Department of Mechanical and Mathematical Engineering: Education Program for Mechanical Engineering, Education Program for Mechanical Systems**

Standards for degree conferral

It is necessary to acquire the prescribed number of credits for completion of the course (a total of 31 credits or more including 8 credits of required subjects in the Education Program, 22 credits of elective subjects in the Education Program and subjects available for all Departments including 12 credits of elective subjects of Special Basic subjects and 1 credit out of Subjects for Science and Technology), and pass the master's thesis examination and final exam after receiving the required research guidance. Thesis defense will be conducted based on results of the master's thesis submitted by the prescribed deadline and the oral presentation examination.

Road map for acquisition of degree

(First year)
- Acquire more than 23 credits in elective subjects.
- Determine topic of master's thesis, and learn the basics of research.
- Master searching of literature necessary for research, how to read literature, and how to write papers, etc., through lab seminars.

(Second year)
- Advance research for master's thesis.
- Give a presentation on research results at an academic conference, etc.

○ **Department of Mechanical and Mathematical Engineering: Education Program for Applied Mathematics**

Standards for degree conferral

Requirements for completion of the Master's Course shall be: to (i) stay in the Master's Course for two or more years, (ii) acquire a total of 31 credits or more including 18 credits of required subjects in the

Education Program and 4 credits of elective subjects of Special Basic subjects and (iii) pass the master's thesis and Master's Project examination and the final exam after receiving the required research guidance. However, as for Subjects for Science and Technology, only 1 credit shall be accepted as credit toward the requirements for completion out of Advanced Science and technology, English Education or Advanced General Education. Moreover, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient.

Road map for acquisition of degree

(First year)

- Make effort for acquiring more than 13 credits in elective subjects.
- Master searching of literature necessary for research, how to read literature, and how to write papers, etc., through lab seminars.
- Determine topic of master's thesis and start on research.

(Second year)

- Acquire all the credits necessary for completion.
- Advance research on master's thesis and give a presentation on research results at an academic conference, etc.
- Compile the research results into the master's thesis and pass the examination.

○ **Department of Computer Science and Electrical Engineering: Education Program for Electrical Engineering**

Standards for degree conferral

Requirements for completion of Education Program for Electrical Engineering shall be: to (i) stay in the Master's Course for two or more years, (ii) acquire a total of 31 credits or more including 8 credits of required subjects in the Education Program, 22 credits of elective subjects including 12 credits of elective subjects of Special Basic subjects in the Education Program, and 1 credit of Subjects for Science and Technology, and (iii) pass the master's thesis examination and final exam after receiving the required research guidance. However, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient.

Road map for acquisition of degree

(First year)

- Through taking the Master's Course, learn basic knowledge of Computer Science and Electrical Engineering broadly, as well as deepen knowledge with respect to field related to the topic of the master's thesis.
- Based on discussions with the Supervisor, formulate research plan and start on research.
- Master searching of literature necessary for research, how to read literature, how to make logical arguments, and presentation methods, etc., through lab seminars.

(Second year)

- Acquire all the credits necessary for completion of Education Program for Electrical Engineering.
- Advance research on master's thesis and give a presentation on the research results at an academic conference, etc. depending on the progress.

- Submit the research results as master's thesis, and give a presentation on the contents thereof at Master's Thesis Presentation Meeting.

○ **Department of Computer Science and Electrical Engineering: Education Program for Electronic Engineering**

Standards for degree conferral

Requirements for completion of Education Program for Electronic Engineering shall be: to (i) stay in the Master's Course for two or more years, (ii) acquire a total of 31 credits or more including 8 credits of required subjects in the Education Program, 22 credits of elective subjects including 12 credits of elective subjects of Special Basic subjects in the Education Program, and 1 credit of Subjects for Science and Technology, and (iii) pass the master's thesis examination and final exam after receiving the required research guidance. However, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient.

Road map for acquisition of degree

(First year)

- Through taking the Master's Course, learn basic knowledge of Computer Science and Electrical Engineering broadly, as well as deepen knowledge with respect to field related to the theme of the master's thesis.
- Based on discussions with the Supervisor, formulate research plan and start on research.
- Master searching of literature necessary for research, how to read literature, how to make logical arguments, and presentation methods, etc., through lab seminars.

(Second year)

- Acquire all the credits necessary for completion of Education Program for Electronic Engineering.
- Advance research on master's thesis and give a presentation on the research results at an academic conference, etc. depending on the progress.
- Submit the research results as master's thesis, and give a presentation on contents thereof at Master's Thesis Presentation Meeting.

○ **Department of Computer Science and Electrical Engineering: Education Program for Computer Science**

Standards for degree conferral

Requirements for completion of Education Program for Computer Science shall be: to (i) stay in the Master's Course for two or more years, (ii) acquire total 31 credits or more including 8 credits of required subjects of the Education Program, 22 credits of elective subjects including 12 credits of elective subjects of Special Basic subjects of Education Program, and 1 credit of Subjects for Science and Technology, and (iii) pass the master's thesis examination and final exam after receiving the required research guidance. However, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient.

Road map for acquisition of degree

(First year)

- Through taking the Master's Course, learn basic knowledge of Computer Science and Electrical Engineering broadly, as well as deepen knowledge with respect to field related to the theme of the master's thesis.
- Based on discussions with the Supervisors, formulate research plan and start on research.
- Master searching of literature necessary for research, how to read literature, how to make logical arguments, and presentation methods, etc., through lab seminars.

(Second year)

- Acquire all the credits necessary for completion of Education Program for Computer Science.
- Advance research on master's thesis and give a presentation on the research results at an academic conference, etc. depending on the progress.
- Submit the research results as master's thesis, and give a presentation on the contents thereof at Master's Thesis Presentation Meeting.

○ **Department of Materials Science and Applied Chemistry: Education Program for Chemistry and Bioscience**

Standards for degree conferral

Requirements for completion of Master's Course shall be: to (i) stay in the Master's Course for two or more years, (ii) acquire a total of 31 credits or more required for completion and (iii) pass the master's thesis examination and final exam (examination by public hearing) after receiving the required research guidance. In addition, in order to undergo the examination of master's thesis research, it is necessary to undergo an interim examination in the first year. Prescribed number of credits required for completion (total 31 credits or more) means 4 credits from Special Seminar on Applied Bioscience I and 4 credits from Special Seminar on Applied Bioscience II, as required Major subjects, in addition, elective subjects out of Special Basic subjects and Special Applied subjects (18 credits or more, including 14 credits or more from Special Basic subjects and Special Applied subjects in this Education Program) and Subjects for Science and Technology (only 1 credit shall be accepted as credit toward the requirements for completion). As for Major subjects (elective), it is possible to take from Education Program for Chemistry and Bioscience, Education Program for Chemistry and Materials and subjects available for all Departments.

Degree defense will be made by the review committee, which consists of one chief examiner and two or more assistant examiners, and upon report thereby, final judgment will be made by deliberations at a faculty meeting of the Graduate School of Science and Technology. Moreover, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient (Application of Exceptional Cases of Length of Course of Study).

Road map for acquisition of degree

(First year)

- Formulate a plan for taking elective subjects over two years.
- Determine topic of master's thesis, and learn the basics of research.
- Master searching of literature necessary for research, how to read literature, and how to write papers, etc., through lab seminars.
- Acquire 12 or more credits in elective subjects before end of the first year.

- Take Special Seminar on Applied Bioscience I.

(Second year)

- Acquire all the credits necessary for completion.
- Advance research for master's thesis.
- Give a presentation on research results at an academic conference, etc.
- Give a presentation on research at the Master's Thesis Presentation Meeting and submit the master's thesis.

○ **Department of Materials Science and Applied Chemistry: Education Program for Chemistry and Materials**

Standards for degree conferral

Requirements for completion of Master's Course shall be: to (i) stay in the Master's Course for two or more years, (ii) acquire total 31 credits or more required for completion and (iii) pass the master's thesis examination and final exam (examination by public hearing) after receiving the required research guidance. In addition, in order to undergo examination for master's thesis research, it is necessary to undergo interim examination in the first year. Prescribed number of credits required for completion (total 31 credits or more) means 4 credits from Special Seminar on Applied Chemistry I and 4 credits from Special Seminar on Applied Chemistry II, as required Major subjects, in addition, elective subjects out of Special Basic subjects and Special Applied subjects (18 credits or more, including 14 credits or more from Special Basic subjects and Special Applied subjects in this Education Program) and Subjects for Science and Technology (only 1 credit shall be accepted as credit toward the requirements for completion). As for Major subjects (elective), it is possible to take from Education Program for Chemistry and Bioscience, Education Program for Chemistry and Materials and subjects available for all Departments.

Degree defense will be made by the review committee, which consists of one chief examiner and two or more assistant examiners, and upon report thereby, final judgment will be made by deliberations at a faculty meeting of Graduate School of Science and Technology. Moreover, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient (Application of Exceptional Cases of Length of Course of Study).

Road map for acquisition of degree

(First year)

- Make a plan for taking elective subjects for two years.
- Determine topic of master's thesis, and learn the basics of research.
- Master searching of literature necessary for research, how to read literature, and how to write papers, etc., through lab seminars.
- Acquire 12 or more credits in elective subjects before end of the first year.
- Take Special Seminar on Applied Chemistry I.

(Second year)

- Acquire all the credits necessary for completion.
- Advance research for master's thesis.
- Give a presentation on research results at an academic conference, etc.
- Give a presentation on research at the Master's Thesis Presentation Meeting and submit the master's thesis.

○ **Department of Materials Science and Applied Chemistry: Education Program for Materials Science and Engineering**

Standards for degree conferral

Requirements for completion of Master's Course shall be: to (i) stay in the Master's Course for two or more years, (ii) acquire a total of 31 credits or more required for completion and (iii) pass the master's thesis examination and final exam after receiving the required research guidance.

[Credits necessary for completion]

(i) 8 credits from the required subjects of Special Seminar for Materials Science I, Special Seminar for Materials Science II

(ii) 1 credit or more from Subjects for Science and Technology

(iii) 22 credits or more, including 12 credits of Special basic subjects and Special applied subjects on this Education Program

[Thesis defense]

Thesis defense will be consulted to the review committee, which consists of one chief examiner and two or more assistant examiners based on the results of submitted master's thesis and oral presentation examination, and upon report thereby, deliberations are conducted at a faculty meeting of the Graduate School of Science and Technology, to judge the results.

Road map for acquisition of degree

(First year)

- Make a plan for taking elective subjects for two years.
- Determine topic of master's thesis, and learn the basics of research.
- Master searching of literature necessary for research, how to read literature, and how to write papers, etc., through lab seminars.

(Second year)

- Acquire all the credits necessary for completion.
- Advance research for master's thesis.
- Give a presentation on research results at an academic conference, etc.

Research Type Internship Implementation Guidelines

Customs of companies, etc. regarding employment have been rapidly changing as a result of social and economic changes in Japan, including the progress of globalization and computerization and the changes of structure of industry, and the personnel requirements have also significantly changed. In this context, Kumamoto University is striving to enhance education and research functions aiming at fostering creative personnel also with the viewpoint of fostering personnel to meet the needs of the industry sector, and the Research Type Internship, which is being introduced in the Master's Course of this Graduate School, will be carried out according to the following guidelines.

1) Objective

○ Through implementation of research type internships, further promote collaboration between the university and society (enterprises, government offices, etc.) or multiple education and research institutes and strive to improve and enhance education and research specifics at the university.

○ By utilizing and mastering high level knowledge and technologies in specialized fields in the company workplace etc., develop practical personnel with greater ability to adjust to actual society.

○ Develop personnel who can re-recognize the importance of communication skills, etc. in the company workplace, and formulate and put into practice methods of self-cultivation.

2) Implementation form

Classified into three types: "internship (general)" "different field internship" and "overseas internship" For each internship, credit is certified via the prescribed assessment.

Different field internship means to have an internship in another lab that conducts leading edge research. Through internships in research labs in totally different fields, rather than insisting on specialization, students are expected to experience research and research methods different from their fields of specialization, and master the ability to integrate different fields, which is required for exploring this new era, in the context of more sophisticated, diversified, and globalized science and technology.

3) Implementation outline

(i) Implementation period: within the master's course year, 2 years as standard

(ii) Number of days: Internship (general) is 10 days or longer (cumulative total)
(At least 5 days at destination of internship.)
Different field internship and overseas internships are three weeks or longer (cumulative total)
(Including other research labs inside the University, a total of three weeks or more at other universities and research institutes, etc. inside and outside Japan.)

(iii) Recognition of credits: Internship Programs I [elective 2 credits] (class registration is required)
-After completion of Internship, submit a report (A4 size paper: format as desired) in the designated format with "Research Type Internship Report" as the front page, and receive a score for credits (full score: 80 points)

-To receive credits, participation at “Internship Report Presentation” is required.

-Internship Committee judges communication skills at the Internship Report Presentation and reports to the Committee.

The committee makes a comprehensive judgment based on the Internship Report, whether or not the student won some award in the Presentation (such as performance results by voting system at the venue), etc., and certifies credits and makes an appraisal (adds 10 points for participation in the Presentation and 10 points for winning an award at a Report Meeting).

(iv) Results of Presentation: created a “Internship Results Presentation Meeting Abstract and Poster” and submitted it to the section in charge at the Internship held company in advance, obtained approval for participation in a Results Presentation Meeting, and submitted documents certifying this (via discretionary format) to the Academic Affairs Section of GSST.

At “Internship Presentation,” whether or not matters related to the contents of Internship implementation or research details are discussed is not relevant.

Contents discussed shall primarily be the formulation of self-improvement methods based on experiences during the Internship and a report on the progress of efforts and results.

4) Cautions

Students on Internship must act with self-awareness of being students, and strictly observe the following matters in working.

- ○ Take out Personal Accident Insurance for Student Pursuing Education and Research (Internship Insurance).
- ○ Fully understand and follow the research and guidance plan at the destination organization (company, administrative office, etc.).
- ○ Strictly keep confidential matters.
- ○ If judged to be inappropriate to be an intern, the Internship shall be ordered suspended, and the student shall not be allowed to have another Internship afterward.

Lecture subjects and the credits

Master's Course

（1）Subjects for each Department

Departments	Courses・Education Programs	Subject Category	Subjects	Credits	
				Required	Elective
Department of Science	Course of Mathematics		Special Topics on Algebra A		2
			Special Topics on Algebra B		2
			Special Topics on Algebra C		2
			Special Topics on Algebra D		2
			Special Topics on Algebra E		2
			Special Topics on Algebra F		2
			Special Topics on Algebra G		2
			Special Topics on Geometry A		2
			Special Topics on Geometry B		2
			Special Topics on Geometry C		2
			Special Topics on Geometry D		2
			Special Topics on Analysis A		2
			Special Topics on Analysis B		2
			Special Topics on Analysis C		2
			Special Topics on Stochastic Analysis		2
			Special Topics on Applied Analysis A		2
			Special Topics on Applied Analysis B		2
			Special Course of Mathematics A		1
			Special Course of Mathematics B		1
			Special Course of Mathematics C		1
			Special Course of Mathematics D		2
			Special Course of Mathematics E		2
			Special Course of Mathematics F		2
			Special Course of Mathematics G		1
			Special Course of Mathematics H		1
			Special Course of Mathematics I		1
			Special Seminar on Mathematics I	4	
			Special Seminar on Mathematics II	4	
			Seminar on Mathematics I	4	
			Seminar on Mathematics II	4	
	Course of Physics		Advanced Course of Physics I		2
			Advanced Course of Physics II		2
			Quantum Field Theory I		2
			Quantum Field Theory II		2
			Electron Theory of Solids A		1
			Electron Theory of Solids B		1
			Advanced Computational Physics I		2
			Advanced Theory of Astrophysics I		2
			Theory of General Relativity		2
			Advanced Condensed Matter Physics I		2
			Condensed Matter Photo-physics		2
			Ultrafast Spectroscopy		2
			Mesoscopic Physics		2
			Advanced Course of High Pressure Physics I		2
			Advanced Data Science I		2
			Low Dimensional Condensed Matter Physics I		2
			Physics of Structure and Dynamics in Materials I		2
			X-ray spectroscopy I		2
			Special Course of Physics A		1
			Special Course of Physics B		1
			Special Course of Physics C		1
			Special Course of Physics D		1
			Special Course of Physics E		2
			Special Course of Physics F		2
			Special Seminar on Physics I	4	
			Special Seminar on Physics II	4	
			Seminar on Physics I	4	
			Seminar on Physics II	4	
	Course of Chemistry		Advanced Physical Chemistry A		2
			Advanced Physical Chemistry B		2
			Advanced Physical Chemistry C		2
			Advanced Inorganic Chemistry A		2
			Advanced Inorganic Chemistry B		2
			Advanced Inorganic Chemistry C		2
			Advanced Organic Chemistry A		2
			Advanced Organic Chemistry B		2
			Advanced Analytical Chemistry A		2
			Advanced Analytical Chemistry B		2
			Advanced Analytical Chemistry C		2
			Advanced Integrated Sciences A		2
			Special Course of Chemistry A for Graduate Students		1
			Special Course of Chemistry B for Graduate Students		1
			Special Course of Chemistry C for Graduate Students		1
			Special Course of Chemistry D for Graduate Students		1
			Special Course of Chemistry E for Graduate Students		2
			Special Course of Chemistry F for Graduate Students		2

Departments	Courses・Education Programs	Subject Category	Subjects	Credits	
				Required	Elective
Department of Science	Course of Chemistry		Special Seminar on Chemistry I	4	
			Special Seminar on Chemistry II	4	
			Seminar on Chemistry I	4	
			Seminar on Chemistry II	4	
	Course of Earth and Environmental Sciences		Physico-chemical Petrology		2
			Climate Systems		2
			Advanced Structural Geology		2
			Paleoceanography		2
			Sedimentology		2
			Advanced Lecture on Hydrology		2
			Advanced Kinetic Mineralogy		2
			Earth Material Science		2
			Analysis of Atmospheric Environment		2
			Stratigraphy		2
			Ocean Floor Geo-science		2
			Advanced Hydrosphere Environmental Science		2
			Advanced Solid Earth Geophysics		2
			Advanced Geochemistry		2
			Extream-Condition Materials Processing		2
			Mantle Petrology		2
			Volcano Geology		2
			Practical Training on Earth and Environmental Sciences A		1
			Practical Training on Earth and Environmental Sciences B		1
			Special Course of Earth and Environmental Sciences A		1
			Special Course of Earth and Environmental Sciences B		1
			Special Course of Earth and Environmental Sciences C		1
			Special Course of Earth and Environmental Sciences D		1
			Special Course of Earth and Environmental Sciences E		2
			Special Course of Earth and Environmental Sciences F		2
			Special Seminar on Earth and Environmental Sciences I	4	
			Special Seminar on Earth and Environmental Sciences II	4	
			Seminar on Earth and Environmental Sciences I	4	
			Seminar on Earth and Environmental Sciences II	4	
	Course of Biological Sciences		Advanced Animal Cell Biology I		1
			Advanced Animal Engineering I		1
			Advanced Developmental Biology I		1
			Advanced Molecular Genetics I		1
			Advanced Molecular cell biology I		1
			Advanced Plant Molecular Biology I		1
			Advanced Plant Cell Biology I		1
			Advanced Plant Genetics I		1
			Advanced Phylogeny and Systematics I		1
			Advanced Conservation Biology I		1
			Advanced Marine Ecology and Diversity I		1
			Advanced Evolutionary Ecology Ⅰ		1
			Advanced study of biodiversity Ⅰ		1
			Advanced Neuroendocrinology Ⅰ		1
			Advanced Bioimaging I		1
			Advanced Community and Population Ecology I		1
			Advanced RNA Biology I		1
			Advanced Plant Physiology and Development I		1
			Special Course of Life Science A		1
			Special Course of Life Science B		1
			Special Course of Life Science C		1
			Special Course of Life Science D		1
			Special Course of Life Science E		2
			Special Course of Life Science F		2
			Special Seminar on Life Science I	4	
			Special Seminar on Life Science II	4	
			Seminar on Life Science I	4	
			Seminar on Life Science II	4	
	All Courses		Studies in Science	4	
Department of Civil and Environmental Engineering and Architecture	Education Program for Civil and Environmental Engineering	Special Basic Subjects	Scientific English for Civil Engineer	2	
			Seismic Engineering		2
			Environmental Hydrology		2
			Environmental Microbial Biotechnology		2
			Watershed and River Management for Ecological Environment		2
			Maintenance for concrete and steel structures		2
			Civil and Environmental Materials		2
			Applied Rock Engineering		2
			Earthquake Geotechnical Engineering		2

Departments	Courses・Education Programs	Subject Category	Subjects	Credits	
				Required	Elective
Department of Civil and Environmental Engineering and Architecture	Education Program for Civil and Environmental Engineering	Special Basic Subjects	Subsurface Development Engineering		2
			Applied Geoenvironmetal Engineering		2
			River Environmental Engineering		2
			Bridge Engineering		2
			Informatics and Coastal disaster		2
			Hydrologic Engineering		2
			Research and Scholarly Activity on Civil Engineering I	4	
			Research and Scholarly Activity on Civil Engineering II	4	
			Civil and Environmental Engineering Seminar I	1	
			Civil and Environmental Engineering Seminar II	1	
		Special Applied Subjects	Infrastructure Planning		2
			Community Management		2
			Infrastructure Design		2
			Transportation Planning and Management		2
			Transportation safety management		2
			Environment and Disaster Management		2
	Education Program for Urban and Regional Planning and Design	Special Basic Subjects	Scientific English for Civil Engineering	2	
			Seismic Engineering		2
			Environmental Hydrology		2
			Environmental Microbial Biotechnology		2
			Watershed and River Management for Ecological Environment		2
			Infrastructure Planning		2
			Community Management		2
			Infrastructure Design		2
			Transportation safety management		2
			Transportation Planning and Management		2
			Environment and Disaster Management		2
			Bridge Engineering		2
			Research and Scholarly Activity on Regional Design I	4	
			Research and Scholarly Activity on Regional Design II	4	
			Urban and Regional Design Seminar I	1	
			Urban and Regional Design Seminar II	1	
		Special Applied Subjects	Maintenance for concrete and steel structures		2
			Civil and Environmental Materials		2
			Earthquake Geotechnical Engineering		2
			Introduction of Geoenvironmetal Engineering		2
			Introduction of Geoenvironmetal Engineering		2
			Introduction of River Engineering		2
			Introduction of Coastal Engineering		2
			Regional Policy		2
	Education Program for Architecture and Building Engineering	Architecture	Research Practicum in Architecture and Building Science I		2
			Research Practicum in Architecture and Building Science II		2
			Research Practicum in Architecture and Building Science III		2
			Research Practicum in Architecture and Building Science IV		2
		Architecture Design	Architectural studio work II	4	
			Architectural studio work III	4	
			Architectural studio work IV	4	
			Master's Project	4	
		Architecture Urban Culture	Research Practicum in Architecture and Building Science I		2
			Research Practicum in Architecture and Building Science II		2
			Basic subject of architecture, cities and culture, No.1		2
			Basic subject of architecture, cities and culture, No.2		2
			Basic subject of architecture, cities and culture, No.3		2
		Special Applied Subjects	Earthquake Engineering		2
			Building design against loads		2
			Reinforced Concrete Structure		2
			Plastic Analysis of Structures		2
			Building Material Design		2
			Advanced Structural Design		2
			Mechanics on Fracture of Materials		2
			Selected Topics in Timber Materials		2
			Advanced Interface Mechanics		2
			Seminar on Structural Engineering I		2
			Seminar on Structural Engineering II		2
			Seminar on Structural Engineering III		2
			Advanced Architectural Environment I		2
			Advanced Architectural Environment II		2
			Advanced Architectural Environment III		2
			Seminar on Architectural Environment I		2

Departments	Courses・Education Programs	Subject Category	Subjects	Credits	
				Required	Elective
Department of Civil and Environmental Engineering and Architecture	Education Program for Architecture and Building Engineering	Special Applied Subjects	Seminar on Architectural Environment II		2
			Seminar on Architectural Environment III		2
			Selected Topics of Architectural History of Western World		2
			Strategies for Building Information Management		2
			Analysis on Urban Structure		2
			Architectural Space Composition		2
			Design Practice in Architectural Program		2
			Architectural Presentation		2
			Seminar on Facility Management		2
			Seminar on Landscape Conservation and Renovation		2
			Workshop on Digital Techniques for Planning and Design		2
			Workshop on Digital Techniques for Spatial Analysis		2
			Practice of History of Architecture I		2
			Practice of History of Architecture II		2
			Architectural Business Training		4
			English Communication		2
	All Education Programs		Advanced Science and Technology in Japan I		2
			Seminar on Special Projects I		2
Department of Mechanical and Mathematical Engineering	Education Program for Mechanical Engineering	Special Basic Subjects	Advances Theory of Precision Processing Technology		2
			Lubricated System in Mechanical Engineering		2
			Advanced Fluids Engineering I		2
			Advanced Fluids Engineering II		2
			Advanced Thermal Engineering I		2
			Advanced Thermal Engineering II		2
			Advanced Thermal Engineering III		2
			Multiphase Science and Technology		2
			Numerical Solution of Partial Differential Equations		2
			Theory of Energy Conversion		2
			Advanced Strength and Fracture Design		2
			Advanced Material Processing Technology		2
			Safety Engineering		2
			Micro-Nano Fabrication		2
			Advanced Biomedical Engineering		2
			Special Lecture on Mechanical Engineering I	4	
			Special Lecture on Mechanical Engineering II	4	
		Special Applied Subjects	Manufacturing Environment		2
			Measurement and Instrumentation Physics		2
			Intelligent Mobile Machines		2
			Advanced Vibration Engineering		2
			Advanced Intelligent Systems		2
			Advanced Machine Intelligence		2
			Computer Aided Mechanics		2
			Advanced Metalworking Engineering		2
			Advanced Solid Mechanics		2
			Product Design		2
			Advanced Robust Control		2
			Advanced Space Mechanical Engineering		2
		Special Common Subjects	Advanced Engineering Mathematics I		2
			Advanced Engineering Mathematics II		2
	Education Program for Mechanical Systems	Special Basic Subjects	Manufacturing Environment		2
			Measurement and Instrumentation Physics		2
			Intelligent Mobile Machines		2
			Advanced Vibration Engineering		2
			Advanced Intelligent Systems		2
			Advanced Machine Intelligence		2
			Computer Aided Mechanics		2
			Advanced Metalworking Engineering		2
			Advanced Solid Mechanics		2
			Product Design		2
			Advanced Robust Control		2
			Advanced Space Mechanical Engineering		2
			Special Lecture on Mechanical System I	4	
			Special Lecture on Mechanical System II	4	

Departments	Courses・Education Programs	Subject Category	Subjects	Credits	
				Required	Elective
Department of Mechanical and Mathematical Engineering	Education Program for Mechanical Systems	Special Applied Subjects	Advances Theory of Precision Processing Technology		2
			Lubricated System in Mechanical Engineering		2
			Advanced Fluids Engineering I		2
			Advanced Thermal Engineering II		2
			Advanced Thermal Engineering I		2
			Advanced Thermal Engineering II		2
			Advanced Thermal Engineering III		2
			Multiphase Science and Technology		2
			Numerical Solution of Partial Differential Equations		2
			Theory of Energy Conversion		2
			Advanced Strength and Fracture Design		2
			Advanced Material Processing Technology		2
			Safety Engineering		2
			Micro-Nano Fabrication		2
			Advanced Biomedical Engineering		2
		Special Common Subjects	Advanced Engineering Mathematics I		2
			Advanced Engineering Mathematics II		2
	Education Program for Applied Mathematics	Special Basic Subjects	Advanced Analysis I		2
			Advanced Analysis II		2
			Advanced Stochastic Analysis I		2
			Advanced Stochastic Analysis II		2
			Advanced Statistical Science I		2
			Advanced Statistical Science II		2
			Advanced Information Mathematics I		2
			Advanced Information Mathematics II		2
			Seminar on Mathematical Engineering	4	
			Special Course of Mathematical Engineering A		1
			Special Course of Mathematical Engineering B		1
			Special Course of Mathematical Engineering C		1
			Special Course of Mathematical Engineering D		1
			Special Research on Mathematical Engineering	10	
		Special Applied Subjects	Seminar on Applied Mathematics	4	
			Advanced Fluids Engineering I		2
			Advanced Fluids Engineering II		2
			Numerical Solution of Partial Differential Equations		2
			Theory of Energy Conversion		2
			Advanced Vibration Engineering		2
			Advanced Intelligent Systems		2
			Advanced Machine Intelligence		2
			Computer Aided Mechanics		2
	All Education Programs		Advanced Science and Technology in Japan I		2
			Seminar on Special Projects I		2
Department of Computer Science and Electrical Engineering	Education Program for Electrical Engineering	Special Basic Subjects	Nano-Structure Device Engineering		2
			Electronic Device Engineering		2
			Discharge Plasma Engineering I		2
			Discharge Plasma Engineering II		2
			High Voltage Pulsed Power Engineering		2
			Power System Engineering		2
			Advanced Technology of Power Electronics		2
			Non-destructive Testing Engineering		2
			Advanced Semiconductor Physics		2
			Bioelectrics in Plants		2
			Advanced Lectures on Optical Measurement Engineering		2
			Pulsed Power Technologies in Medical Science		2
			Shock Wave Bioelectrics		2
			Advanced Electric Power Frontier A		2
			Advanced Electric Power Frontier B		2
			Dielectric materials engineering		2
			Advanced Semiconductor Packaging and Implementation		2
			Special Practice on Electrical Engineering		2
			Special Seminar on Electrical Engineering I	2	
			Special Seminar on Electrical Engineering II	2	
			Special Research on Electrical Engineering	4	
		Special Applied Subjects	Advanced Systems Control I		2
			Advanced Systems Control II		2
			Advanced Biological Information System		2
			Advanced Digital Signal and Image Processing I		2
			Advanced Digital Signal and Image Processing II		2

Departments	Courses・Education Programs	Subject Category	Subjects	Credits	
				Required	Elective
Department of Computer Science and Electrical Engineering	Education Program for Electrical Engineering	Special Applied Subjects	Computer Vision		2
			Advanced Multimedia Signal Processing		2
			Advanced Wireless Telecommunication Engineering		2
			Applied Information Theory		2
			Advanced VLSI systems Engineering		2
			Advanced Computer Security		2
			Advanced Computer Organization		2
			Introduction to Information and Communications Network		2
			Media Information Processing		2
Department of Computer Science and Electrical Engineering	Education Program for Electronic Engineering	Special Basic Subjects	Advanced Systems Control I		2
			Advanced Systems Control II		2
			Advanced Biological Information System		2
			Advanced Digital Signal and Image Processing I		2
			Advanced Digital Signal and Image Processing II		2
			Advanced Multimedia Signal Processing		2
			Advanced Wireless Telecommunication Engineering		2
			Advanced Embedded Systems Engineering		2
			Special Practice on Electronics		2
			Special Seminar on Electronics I	2	
			Special Seminar on Electronics II	2	
			Special Research on Electronics	4	
			Nano-Structure Device Engineering		2
			Electronic Device Engineering		2
			Discharge Plasma Engineering I		2
			Discharge Plasma Engineering II		2
			High Voltage Pulsed Power Engineering		2
			Power System Engineering		2
			Advanced Technology of Power Electronics		2
			Computer Vision		2
			Non-destructive Testing Engineering		2
			Bioelectrics in Plants		2
			Advanced Lectures on Optical Measurement Engineering		2
			Pulsed Power Technologies in Medical Science		2
			Shock Wave Bioelectrics		2
			Advanced Electric Power Frontier A		2
			Advanced Electric Power Frontier B		2
			Dielectric materials engineering		2
			Advanced Computer Organization		2
			Data Engineering		2
			Distributed Systems		2
			Advanced VLSI systems Engineering		2
			Computer-Aided Education System		2
			Media Information Processing		2
			Advanced Computer Security		2
			Advanced Semiconductor Physics		2
			Programming Language		2
			Data Mining		2
			Applied Information Theory		2
			Introduction to Information and Communications Network		2
			Advanced Artificial Intelligence Engineering		2
	Education Program for Computer Science	Special Basic Subjects	Advanced Computer Organization		2
			Distributed Systems		2
			Advanced VLSI systems Engineering		2
			Data Engineering		2
			Computer Vision		2

Departments	Courses・Education Programs	Subject Category	Subjects	Credits	
				Required	Elective
Department of Computer Science and Electrical Engineering	Education Program for Computer Science	Special Basic Subjects	Data Mining		2
			Applied Information Theory		2
			Programming Language		2
			Advanced Computer Security		2
			Introduction to Information and Communications Network		2
			Media Information Processing		2
			Computer-Aided Education System		2
			Advanced Artificial Intelligence Engineering		2
			Advanced Custom Computing		2
			Special Practice on Computer Science		2
			Special Seminar on Computer Science I	2	
			Special Seminar on Computer Science II	2	
			Special Research on Computer Science	4	
			Data Science Exercise【Note 1】		4
			Data Science Laboratory【Note 1】		2
	Education Program for Computer Science	Special Applied Subjects	Advanced Systems Control I		2
			Advanced Systems Control II		2
			Advanced Biological Information System		2
			Advanced Digital Signal and Image Processing I		2
			Advanced Digital Signal and Image Processing II		2
			Advanced Multimedia Signal Processing		2
			Advanced Wireless Telecommunication Engineering		2
			Advanced Semiconductor Physics		2
			Nano-Structure Device Engineering		2
			Power System Engineering		2
			Non-destructive Testing Engineering		2
			Bioelectrics in Plants		2
			Advanced Lectures on Optical Measurement Engineering		2
			Pulsed Power Technologies in Medical Science		2
			Shock Wave Bioelectrics		2
			Advanced Electric Power Frontier A		2
			Advanced Electric Power Frontier B		2
			Dielectric materials engineering		2
	All Education Programs		Advanced Science and Technology in Japan I		2
			Seminor on Special Projects I		2

【 Note 1】The credits of these subjects shall not be accepted as the requirment for completion of GSST.

Departments	Courses・Education Programs	Subject Category	Subjects	Credits	
				Required	Elective
Department of Materials Science and Applied Chemistry	Education Program for Chemistry and Bioscience	Special Basic Subjects	Advanced Structural Control of Polymeric Materials		1
			Advanced Polymer Composite Materials		1
			Bioanalytical Science		1
			Advanced Organic Materials		1
			Advanced Polymers for Separation of Bio-Products		1
			Nano-Material Science for Medicine		1
			Molecular Enzymology		1
			Advanced Photofunctional Chemistry		1
			Molecular Imaging and Nanomedicine		1
			Advanced Chemical Biology		1
			Special Lecture on Applied Biochemistry		2
			Workshop on Applied Biochemistry		2
			Seminor on Applied Biochemistry		1
			Special Seminar on Applied Biochemistry I	4	
			Special Seminar on Applied Biochemistry II	4	
		Special Applied Subjects	Advanced Catalytic Chemistry		1
			Cheminformatics and Materials Informatics		1
			Structural Inorganic Chemistry		1
			Advanced Inorganic Materials		1
			Advanced Functional Materials Engineering		1
			Advanced Reaction Engineering		1
			Advanced Electrochemistry		1
			Interfacial and Structural Chemistry		1
			Analytical chemistry of solid materials		1
			Special Lecture on Applied Chemistry		2

Departments	Courses・Education Programs	Subject Category	Subjects	Credits	
				Required	Elective
Department of Materials Science and Applied Chemistry	Education Program for Chemistry and Materials	Special Basic Subjects	Advanced Catalytic Chemistry		1
			Cheminformatics and Materials Informatics		1
			Structural Inorganic Chemistry		1
			Advanced Inorganic Materials		1
			Advanced Functional Materials Engineering		1
			Advanced Reaction Engineering		1
			Advanced Electrochemistry		1
			Interfacial and Structural Chemistry		1
			Analytical chemistry of solid materials		1
			Special Lecture on Applied Chemistry		2
			Workshop on Applied Chemistry		2
			Seminor on Applied Chemistry		1
			Special Seminar on Applied Chemistry I	4	
			Special Seminar on Applied Chemistry II	4	
	Education Program for Chemistry and Materials	Special Applied Subjects	Advanced Structural Control of Polymeric Materials		1
			Advanced Polymer Composite Materials		1
			Bioanalytical Science		1
			Advanced Organic Materials		1
			Advanced Polymers for Separation of Bio-Products		1
			Nano-Material Science for Medicine		1
			Molecular Enzymology		1
			Advanced Photofunctional Chemistry		1
			Molecular Imaging and Nanomedicine		1
			Special Lecture on Applied Biochemistry		2
	Education Program for Materials Science and Engineering	Special Basic Subjects	Plasticity of Crystalline Materials		2
			Material Interface Science		2
			Interfacial Electrochemistry		2
			Continuum Mechanics		2
			Solidification Theory		2
			Nuclear Materials Science and Engineering		2
			Aerospace Materials		2
			Evaluation of macroscopic structure		2
			Special Seminar for Materials Science I	4	
			Special Seminar for Materials Science II	4	
		Special Applied Subjects	Computer Simulation for Material Science		2
			Non-Equilibrium Materials Science		2
			Electronic Properties of Materials		2
			Functional Ceramics Materials Engineering		2
			Strength of Materials in Several Environments		2
			Introduction to Advanced Materials		2
			Microstructural Characterization		2
			Advanced Materials Characterization		2
	All Education Programs		Advanced Science and Technology in Japan I		2
			Seminar on Special Projects I		2

（2）Subjects Available for All Departments

Departments	Subjects	Credits	
		Required	Elective
All Departments	Internship Programs I		2
	Presentation Award I		1

※The credits of Subjects Available for All Departments shall be accepted for the requirment of completion.

（3）Subjects for Science and Technology （Note 1、Note 2)

Each subject category has multiple lecture subjects.

Departments	Subject Category	Subjects	Credits
			Elective
All Departments	Advanced Science and Technology	Science and Technology in Society I	1 Credit per 1 Subject
		Science and Technology in Society II	
		Current Science and Technology in Japan Ⅰ(Note 3)	2 Credits per 1 Subject
		English for Science and Technology (Note 3)	
	Advanced General Education (Note 4)	Understanding Contemporary Society A	1 Credit per 1 Subject
		Understanding Contemporary Society B	
		Basic Science for Technological Innovation	
		Introduction to Management	
		History of Sciences	
	English Education	Exercise of Technical English Ⅰ	1 Credit per 1 Subject
		Exercise of Technical English II	

(Note 1)：Subjects for Science and Technology will be opened at GJEC (Global Joint Education Center for Science and Technology). For more details, please see the handouts or website at https://www.fast.kumamoto-u.ac.jp/gjec/

(Note 2)：As handling of subjects is different depending on the specialization, please confirm the standards of degree conferral of your Department as to whether these subjects are considered required or elective-required.

(Note 3)：Each subject in Advanced General Education offers multiple lectures (one credit per lecture). Although you are allowed to take more than one lecture, only one credit shall be accepted towards completion of degree requirements.

(Note 4)：The credits of these subjects are not requirement for completion, except that the students from IJEP (International Joint Education Program for Science and Technology) are required to take for completion. Except for these two subjects, Subjects for Science and Technology shall also be accepted as credit transfer from Subjects for each Departments for the students from IJEP.

Requirements for completion of Doctoral Course

Requirements for completion of Doctoral Course shall be: to (i) stay in the Doctoral Course for three or more years, (ii) acquire 12 credits or more from lecture subjects provided in individual courses and educational programs, and (iii) pass the screening and final exam after receiving the required research guidance. However, concerning lecture subjects, if so allowed in courses or educational programs with which the student is affiliated, lecture subjects may be taken in other courses or educational programs of this Graduate School of Science and Technology, other graduate schools of the University, or graduate schools of other universities, and the credits may be certified as credits toward the requirements for completion, up to a maximum of 6 credits (see Regulations of Graduate School of Science and Technology Kumamoto University: https://www.fast.kumamoto-u.ac.jp/gsst/kisoku/) Moreover, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient (see Arrangements for Exceptional Cases of Length of Course of Study at the Graduate School of Science and Technology Kumamoto University: https://www.fast.kumamoto-u.ac.jp/gsst/kisoku/)

[Evaluation standards for examination of doctoral Thesis for Doctoral Course]

(Examination System)

Examination of academic thesis shall be performed by consultations by examiners, which consist of one chief examiner and two or more assistant examiners. Note that at least one examiner must be chosen from the field different from the relevant field.

(Evaluation Standards)

The following points must be all satisfied:

1. Definition of issues

Clear consciousness of the issues, and the significance and necessity of research to resolve the issues are stated.

2. Proper treatment of preceding studies and data

In addition to ascertaining and referring to preceding studies and data in the relevant field, the positioning of research based thereon is clear.

3. Appropriateness of research method

A research method appropriate to the objectives of research is used.

4. Appropriateness and significance of demonstrational process and conclusion

Thrust of argument from setting of issues, analysis, results and consideration is clear and consistent.

5. Appropriateness of construction, expression and notation of Thesis

Use of language and sentence wording is appropriate to an academic thesis.

6. Contribution to academia or society

The thesis has either novelty or originality academically, or has a possibility of responding to the demands of society.

7. Communication ability

The writer can orally present the results of research properly and logically.

[Research ethics education]

Though this is not a requirement for completion, students are obligated to take lessons in research ethics education materials by e-learning (eL-CoRE or CITIJAPAN). IDs and passwords for taking the course will be issued so students must take the course without fail.

(See Guidelines for Implementation of Research Ethics Education (published on the website of the University)).

Standards for degree conferral and road map for degree acquisition

○ **Department of Science: Course of Mathematics**

Standards for degree conferral

1) Acquire a total of 12 credits or more from elective subjects of Subjects for Science and Technology and Major subjects. Among these 12 credits, only 1 credit in Advanced General Education out of Subjects for Science and Technology shall be accepted as credit towards the requirements for completion.
2) Have either one or more papers solely authored by the student or two or more papers co-authored published or be planned to be published in a refereed academic professional journal.
3) Submit a thesis for Doctoral degree (doctoral thesis) and give an oral presentation at Thesis Defense and pass the final exam such as an oral examination.
4) The thesis for the degree must be recognized as excellent research results by the review committee.

Road map for acquisition of degree

(First year)

- Start research according to the research plan submitted upon entering the Doctoral Course to determine the topic of the doctoral thesis.
- Prepare to write papers to be submitted to academic journals.
- Acquire credits that can be acquired before end of the first year.

(Second year)

- Determine the topics of doctoral thesis and develop.
- Submit papers.

(Third year)

- Compile the doctoral thesis and submit it by the prescribed deadline.

○ **Department of Science: Course of Physics**

Standards for degree conferral

In order to complete the course and acquire doctoral degree, it is necessary to acquire 12 credits or more from elective subjects of Subjects for Science and Technology and Major subjects. Moreover, it is necessary to give a presentation on research at Thesis Defense and undergo an oral exam, and submit a doctoral thesis and pass the defense. In addition, as for Advanced General Education from the Subjects for Science and Technology, only 1 credit shall be accepted as credit toward the requirements for completion.

For Doctoral degree, standards for recognition shall be to have logical thinking ability and expressive ability, etc., that are necessary for scientific engineers who have leading-edge research and high-level professional abilities, and to be able to execute research as an independent researcher. In addition, the doctoral thesis must have contents judged to have arrived at the international level, and publication in an international academic professional journal of two or more refereed papers, one of which is as first author, must already be set.

Road map for acquisition of degree

(First year)

- Start research according to the research plan submitted upon entering the Doctoral Course to determine the topic of the doctoral thesis.

(Continue in the second year and thereafter)

- Prepare for writing paper to be submitted in academic journal.
- Acquire credits that can be acquired before end of the first year.

(Second year)

- Determine the topics of doctoral thesis and develop.
- Submit papers.

(Third year)

- Compile the doctoral thesis and submit it by the prescribed deadline.
- Give a presentation on research at Thesis Defense, undergo the oral exam, and submit a doctoral thesis.

○ **Department of Science: Course of Chemistry**

Standards for degree conferral

Acquire 12 credits or more from elective subjects of Subjects for Science and Technology and Major subjects (however, only 1 credit shall be accepted as credit toward the requirements for completion as for Advanced General Education out of Subjects for Science and Technology). For doctoral degree, standards for recognition shall be, to have sufficient knowledge of and ability to understand the relevant research field, ability to formulate a research plan, ability to execute research, and ability to present on research details, as well as ability to execute research as an independent researcher; in addition, one or more papers with contents from the doctoral thesis shall have been published or be set for publication in a refereed international academic professional journal.

In final doctoral thesis examination, thesis review by the examination committee and oral examination at Thesis Defense will be performed, and based on the results of the relevant examination, judgment on conferral of the degree will be made in deliberations at a faculty meeting of the Graduate School of Science and Technology.

Road map for acquisition of degree

During research on the doctoral thesis, use all of the time when there are no lectures or seminars for research on the doctoral thesis. In addition, the student must give an oral presentation at the interim report meeting hosted by the course once a year. The student must be devoted to research on a daily basis aiming at giving a presentation each year at a related academic conference on the contents of the research, and so that the student can publish three or more papers in refereed international academic journals while enrolled in the doctoral course, two or more of which should consist of contents from the doctoral thesis research.

○ **Department of Science: Course of Earth and Environmental Sciences**

Standards for degree conferral

The doctoral thesis has contents judged to have reached international standards, and a part of the contents have been published or are set for publication in an academic professional journal, as two or more papers with the student as a chief author. In the main examination of doctoral thesis, pass the thesis review by the screening committee and oral examination at Thesis Defense.

Acquire a total of 12 credits or more from elective subjects of Subjects for Science and Technology and Major subjects. In addition, as for Advanced General Education from the Subjects for Science and Technology, only 1 credit shall be accepted as credit toward the requirements for completion. Submit a doctoral thesis according to the prescribed procedures and pass the thesis review and final exam including an oral examination at Thesis Defense, etc.

Road map for acquisition of degree

(First year)

- Have discussions on the research topic with the Supervisor based on the research plan made upon advancing to the doctoral course, formulate a concrete research plan and start on surveys and studies.
- Examine the relationships with other research fields through Science Seminars, etc., and forecast the development possibilities of own research topic.
- Review the topic and relevance of each paper for submission and prepare for writing.
- Make effort to acquire elective subject credits at an early stage.

(Second year)

- Determine the doctoral thesis topic considering novelty and possibilities for development.
- Submit papers depending on progress of research.

(Third year)

- Write the doctoral thesis according to the prescribed rules and dates and submit it.

○ **Department of Science: Course of Biological Sciences**

Standards for degree conferral

In order to complete the course and acquire the doctoral degree (Science), it is necessary to acquire 12 credits or more from elective subjects of Subjects for Science and Technology and Major subjects. In addition, as for Advanced General Education from the Subjects for Science and Technology, only 1 credit shall be accepted as credit toward the requirements for completion. Of utmost importance to the doctoral course is to compile research results as a thesis for acquisition of the degree and to have it published in international journals. Therefore, it is necessary to formulate a research plan according to the research topic under the guidance of the Supervisor, execute research and compile the results. A Supervisor Committee that consists of major supervisor and multiple (two to three) supervisors shall be set up and the students must report on the status of progress of research at Committee meetings at least once a year. In addition, the student must give presentations at academic conferences or symposiums, held inside and outside Japan, on the research results. By promoting research even further based on evaluations received by those presentations, continue to compile results worthy of publication as a paper (refereed). Submit the results to a journal as a paper in English, and after undergoing examination the paper must be accepted for publication in a journal. Degree defense shall be performed by the screening Committee (1 chief examiner, 2 or more assistant examiners) reviewing the contents of the doctoral thesis, presentation ability based on oral presentation, and specialized knowledge in the relevant research field, and the degree will be conferred on a person who is judged to be able to execute this series of research activities on his/her own ability.

Road map for acquisition of degree

(First year)

- Acquire credits in elective subjects that can be acquired. Taking Seminar on Science is strongly recommended.
- Conduct research according to a topic determined upon discussions with the Supervisor.
- Report on status of progress of research at the Supervisor Committee meeting.
- Give a presentation on research results at an academic conference, etc.
- Prepare for writing paper to be submitted to academic journals.

(Second year)
- Determine the topics of doctoral thesis and develop.
- Report on status of progress of research at a Supervisor Committee meeting.
- Submit papers on academic journals.

(Third year)
- Compile the research based on the results of referee reading of submitted papers.
- Report on status of progress of research at a Supervisor Committee meeting.
- Acquire 12 or more credits in elective subjects.
- Submit the doctoral thesis and give an oral presentation at the Doctoral Thesis Defense.

○ Department of Advanced Industrial Science: Education Program for Environmental Conservation Engineering, Education Program for Environmental Management and Planning

Standards for degree conferral

In order to complete Education Program for Environmental Conservation Engineering, Education Program for Environmental Management and Planning of the Department of Advanced Industrial Science and acquire Doctoral Degree, following standards must be satisfied.

1) Stay in the Doctoral Course for three years of standard years for completion or longer and, acquire 12 credits or more including 1 credit of Subjects for Science and Technology and 11 credits of elective subjects of Major subjects. However, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient.
2) Have two or more papers published in refereed academic journals as a chief author, one of which must have been written in English.
3) Have English ability sufficient to give an oral presentation and undergo Q&A at an international conference.
4) Submit an original doctoral thesis as a result of voluntary research activities, and after examination by the screening committee, pass the final exam (oral examination).
5) Thesis Review will be made by the screening committee, which consists of one chief examiner and two or more assistant examiners, and upon report thereby, deliberations are conducted at a faculty meeting of the Graduate School of Science and Technology, to judge the results.

Road map for acquisition of degree
- The Supervisor Committee shall be composed of three or more Professors or Associate Professors including the major supervisor, who can give guidance from a wide-range of fields.
- Receive guidance on acquisition of credits and research guidance at the Research Supervisor Committee meeting held at the beginning of each school year.

- Submit a report on research results each year to the Supervisor Committee and hold an Interim Report Presentation Meeting. The Supervisor Committee shall give appraisals and guidance to students based on the results thereof.
- Students shall record the contents of guidance by the Supervisor Committee and submit the record to the Supervisor Committee. Supervisor Committee shall keep these records.
- As final research results, the student submits to the Supervisor Committee a draft of the doctoral thesis, and undergoes evaluation of research and guidance on research in a preparatory review, and having passed, submits the actual thesis.

○ **Department of Advanced Industrial Science: Education Program for Architecture and Environment Planning, Education Program for Building Materials and Structures**

Standards for degree conferral

All of the following items have been satisfied as requirements for completion of the Doctoral Course.

1) Stay in the Doctoral Course for three years or longer and, acquire 12 credits or more including 1 credit of Subjects for Science and Technology and 11 credits of elective subjects of Major subjects. However, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient.
2) Have two or more papers published in a refereed academic journal as first author, as research results. Two refereed proceedings papers may substitute for one of these.
3) Have English ability sufficient to give an oral presentation and undergo Q&A at an international conference.
4) Pass the examination of the doctoral thesis and the final exam. In examination of doctoral thesis, degree defense will be made by the screening committee, which consists of three or more examiners including one chief examiner, and upon report thereby, final judgment will be made by deliberations at a faculty meeting of the Graduate School of Science and Technology.

Road map for acquisition of degree

(First year)
- Under guidance by the Supervisor Committee, which consists of three supervisors including the major supervisor, formulate a research plan according to the research topic and start on surveys and studies.
- Acquire the required credits according to the plan. (Continue in the second year and thereafter)
- Have interest in other research fields, examine relevance to own research topic and develop own research. (Continue in the second year and thereafter)
- Prepare for writing paper to be submitted in academic journal.

(Second year)
- Give presentations at academic conferences or symposiums, held inside and outside Japan, on the research results. Promote research even further based on evaluations received for those presentations.
- Give an oral presentation in English at an international conference.
- Submit refereed papers on academic journals.

(Third year)

- Acquire all the credits necessary for completion.
- Compile the doctoral thesis and submit it by the prescribed deadline.

○ **Department of Advanced Industrial Science: Education Program for Advanced Mechanical Systems, Education Program for Intelligent Mechanical Systems**

Standards for degree conferral

It is necessary to stay in the Doctoral Course for three years or longer and, acquire 12 credits or more including 1 credit of Subjects for Science and Technology and 11 credits of elective subjects of Major subjects, and receive necessary research guidance, pass the doctoral thesis review and final exam. As a result of a preparatory review using a submitted draft of the doctoral thesis, if this is accepted as a doctoral thesis, a final exam by written test and oral test will be performed. In addition, in some cases Thesis Defense will be held by the screening committee.

Road map for acquisition of degree

(First year)
- Acquire 12 or more credits in elective subjects.
- Determine topic of doctoral thesis and learn the basics and background, etc. of the research.

(Second and third year)
- Advance research for doctoral thesis.
- Give a presentation on research results at an academic conference, etc.

○ **Department of Advanced Industrial Science: Education Program for Applied Mathematics**

Standards for degree conferral (degree recognition)

It is necessary to acquire 12 credits or more including 1 credit in Subjects for Science and Technology and 11 credits in Major subjects, and to write a doctoral thesis based on one or more papers (two or more, if the papers are co-authored) published in refereed academic journals, and pass the examination.

Road map for acquisition of degree

(First year)
- Start research according to the research plan submitted upon entering the Doctoral Course to determine the topic of the doctoral thesis.
- Prepare for writing paper to be submitted in academic journal.
- Acquire credits that can be acquired before end of the first year.

(Second year)
- Determine the topics of doctoral thesis and develop.
- Submit papers.

(Third year)
- Compile the doctoral thesis based on published research contents and submit it by the prescribed deadline.

○ **Department of Advanced Industrial Science: Education Program for Computer Science and Communication Engineering, Education Program for Frontier Technology for Energy and Devices, Education Program for Human and Environment Informatics**

Standards for degree conferral

Requirements for completion of the Course is (i) to stay in the Doctoral Course for three years or longer, (ii) acquire 12 credits or more including 1 credit of Subjects for Science and Technology and 11 credits of elective subjects of Major subjects, and receive necessary research guidance, (iii) pass the doctoral thesis review and final exam. However, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient.

Road map for acquisition of degree

(First year)

Under guidance by the Supervisor Committee, which consists of three or more Professors or Associate Professors including the major supervisor, formulate a research plan according to the research topic and start on surveys and studies. - Have interest in topics of other research fields and use it for own research. Moreover, prepare for creation of papers to be submitted to academic journals and acquire credits that can be acquired before end of the first year.

(Second year)

Give presentations at academic conferences or symposiums, held inside and outside Japan, on research results. By promoting research even further based on evaluations received by those presentations, continue to compile results worthy of publication as a paper (refereed). In addition, submit papers depending on progress of research.

(Third year)

Compile the doctoral thesis, write and submit it by the prescribed deadline in accordance with the prescribed rules. A degree will be conferred on the person who is judged to have executed this series of research activities on his/her own ability.

○ **Department of Advanced Industrial Science: Education Program for Applied Chemistry and Biochemistry**

Standards for degree conferral

It is necessary to stay in the Doctoral Course for three years or longer and acquire 12 credits or more, including 1 credit in Subjects for Science and Technology and 11 credits in Major subjects (for lecture subjects in other departments, up to 4 credits can be acquired as credits toward the requirements for completion), and publish two or more papers with doctoral thesis research contents in a refereed international academic journal, as well as give adequate research results presentations at academic conferences inside and outside Japan. Submit doctoral thesis to the screening committee, pass the referee reading thereby, and oral examination at Thesis Defense. Degree defense will be made by the screening committee, which consists of one chief examiner and two or more assistant examiners, and upon report thereby, final judgment will be made by deliberations at a faculty meeting of the Graduate School of Science and Technology. Moreover, concerning the period of stay in the course, for the student who achieves excellent results, a stay of at least one-year in the relevant course shall be sufficient (Application of Exceptional Cases of Length of Course of Study).

Road map toward acquisition of degree

(First year)

- Formulate a plan for doctoral thesis research and start research.
- Have interest in topics of other research fields and use it for own research. (Continue in the second year and thereafter)
- Prepare to write papers to be submitted to academic journals.

(Second year)

- Determine the topics of doctoral thesis and develop.
- Submit papers.

(Third year)

- Acquire all the credits necessary for completion.
- Compile the doctoral thesis and submit it by the prescribed deadline.

○ **Department of Advanced Industrial Science: Education Program for Materials Science and Engineering**

Standards for degree conferral (degree recognition)

For Doctoral degree, standards for recognition shall be: to have sufficient knowledge of and ability to understand the relevant research field, ability to formulate a research plan, ability to execute research, and ability to present on research details, as well as ability to execute research as an independent researcher; in addition, all of following items must be satisfied.

1) Stay in the Doctoral Course for three years or longer and, acquire 12 credits or more including 1 credit of Subjects for Science and Technology and 11 credits of elective subjects of Major subjects and subject available for all departments.
2) Have two or more papers as first author on contents of doctoral thesis research published in an academic journal with referee reading or international conference collected papers with referee reading as research results. Provided, at least one of those papers must be written in English and published in a refereed international academic journal.
3) Give adequate research results presentations at academic conferences inside and outside Japan. At least one presentation out of these must be given in English.
4) Submit the doctoral thesis to the screening committee and pass the examination of the doctoral thesis and final exam. The final exam shall be performed by oral exam at Thesis Defense for the submitted thesis. Degree defense will be made by the screening committee, which consists of one chief examiner and two or more assistant examiners, and upon report thereby, final judgment will be made by deliberations at a faculty meeting of the Graduate School of Science and Technology.

Road map for acquisition of degree

(First year)

- Start research according to the research plan submitted upon entering the Doctoral Course to determine the topic of the doctoral thesis.
- Have interest in topics of other research fields in doctoral thesis research and use it for own research. (Continue in the second year and thereafter)
- Prepare to write papers to be submitted to academic journals.

(Second year)

- Determine the topics of doctoral thesis and develop.
- Submit papers.

(Third year)

- Acquire all the credits necessary for completion.
- Compile the doctoral thesis and submit it by the prescribed deadline.

Conferment Degree

After successful fulfillment of the doctoral course at Graduate School of Science and Technology, doctoral degree will be conferred.
However, the title will be vary depends on each academic education and research at each Departments as follows.

Department of Science:
Doctor of Science, Doctor of Philosophy
Department of Advanced Industrial Science:
Doctor of Engineering, Doctor of Philosophy

（1） Procedure for degree examination for doctoral course

Qualification to apply for a degree and the procedure for degree examination must follow the Regulations on Academic Degrees of Kumamoto University, “Detailed rules on academic degrees of Graduate School of Science and Technology (hereinafter referred to as GSST detailed rules)” and “Agreement on review of thesis at Graduate School of Science and Technology”.
Please refer to this Handbook for students and Bulletin Board System (BBS) in GSST website for procedure for degree examination.
https://www.fast.kumamoto-u.ac.jp/gsst/bbs/

① Preliminary review of thesis

Applicants who seek to apply for thesis defense must apply for the preliminary review of thesis to the supervisor.

The supervisor committee of each department will examine the requested review of thesis and give guidance for a final thesis and the degree.

a . Qualification of applicant for preliminary review of thesis

- An applicant who is registered at Kumamoto University and have obtained at least 8 credits and have received the necessary supervision for their research for the degree.
- From article 3-1, for the student who achieves excellent results, a stay of at least one-year in the relevant course and is expected to complete the required credits shall be sufficient.

b . Application period for preliminary review of thesis

＜Applicants expected to complete in March＞ Early December
＜Applicants expected to complete in September＞ Late May

c . Submission documents

- Applicants who seek to apply for preliminary review of thesis must submit the following documents to the supervisor.

Documents	Forms	Number of copies
Application for preliminary review of thesis	Form 1.doc	1 copy
Draft of thesis	Must state ”Preliminary Thesis Review” on the cover page.	3 copies
(Draft) Abstract of Thesis	Form 2.doc	3 copies
List of publications	Form 3.doc	1 copy

・The following documents must submit to the academic affairs section of GSST.

Documents	Forms	Number of copies
Notification of application for preliminary of Thesis	Form 6.doc	1 copy

② Review of thesis

After the screening of the preliminary review of thesis, students have to follow the procedure when the committee has authorized to review of thesis for the degree examination.

a . Qualification of applicant for review of thesis

・After the screening of the preliminary review of thesis, student who has authorized by committee for review of thesis for the degree examination.

b . Submission period of application for review of thesis

＜Applicants expected to complete in March＞ Mid-January

＜Applicants expected to complete in September＞ Mid-July

c . Submission documents

・Applicants who are going to apply for review of thesis must submit the following documents to the academic affairs section of GSST.

Documents	Forms	Number of copies
1.Application for review of thesis	Form 7.doc	1 copy
2.Abstract of thesis	Form 5.doc(Less than 1600 words)	3 copies
3.List of publications	Form 3.doc(It must specify “The above statement is true and correct, Date, Signature and seal”)	3 copies
4.Resume	Form 4.doc	1 copy
5.Notification for Depositing Doctoral Thesis	Please consult with the supervisor before submission	1 copy

6.Statement of Depositing Abstract of Doctoral Thesis	In case there are compelling reasons	1 copy
7.Electronic files above 1. to 4.	Please bring USB flash drive or send by e-mail to szkn-kyomu@jimu.kumamoto-u.ac.jp	

（２） Final Examination

Final examination will be given by writing or interview for thesis.

（３） Thesis defense

Committee will hold a thesis defense. The date will be announced later.

（４） Disclosure of thesis

Doctoral thesis will be released on Kumamoto University Repository within one year from the date of degree conferment. However, in case there are compelling reasons to disclose their thesis, abstract of doctoral thesis will be disclosed. In this case, their doctoral thesis will be provide for public reading when it is necessary.

a . Submission documents after successful fulfillment of the degree examination

・Successful students must submit the following documents to the academic affairs section of GSST.

Documents	Forms	Number of copies
1.Thesis	Electronic file (submission of bookbinding thesis is not necessary) *Please bring USB flash drive or send by e-mail to szkn-kyomu@jimu.kumamoto-u.ac.jp	
2.Statement of Depositing Doctoral Thesis		1 copy

（５）Schedule for Thesis Defense

Completion in March	Completion in September	Applicants
Early-December	Late May	**1. Preliminary review of thesis** **Application for preliminary review of Thesis** **(Required 8 credits or more)** **<<Documents to be submitted>>** **(To supervisor)** Application for Preliminary review of Thesis [Form 1] Draft of Thesis---3 copies (Draft) Abstract of Thesis[Form 2]---3copies List of Publications [Form 3] **(To Academic Affairs Section of GSST)** Notification of application for preliminary review [Form 6]
Mid-January	Mid-July	**2. Thesis review** **(1) Application for Review of Thesis** **<<Documents to be submitted>>** **(To Academic Affairs Section of GSST)** ① Application for Review of Thesis [Form 7] ② Abstract of Thesis [Form 5]…3copies ③ List of publications [Form 3] …3copies ④ Resume [Form 4] ⑤ Notification for Depositing Doctoral Thesis ⑥ ★Statement of Depositing Abstract of Doctoral Thesis ⑦ Soft copy of above ① to ④ (Please bring USB flash drive or send by email to szkn-kyomu@jimu.kumamoto-u.ac.jp)
Early February	Early August	**(2) Thesis Defense**
Early March	Early September	**(3) After final review** **<<Documents to be submitted>>** **(To Academic Affairs Section of GSST)** ① Thesis（Electronic file）(Please bring USB flash drive or send by email to szkn-kyomu@jimu.kumamoto-u.ac.jp) ② Statement of Depositing Doctoral Thesis
March 25	September 25	**Conferment of degree**

★In case of any compelling reasons to disclose their thesis, the submission is necessary.

（６）Schedule for Doctoral Thesis Defense for Students Seeking for Completion of Course Work without Degree (Retroactive Completion)

Completion in March	Completion in September	Applicants
Early January	Early July	**1. Preliminary review of Thesis** **（required 8 credits or more）** **<<Documents to be submitted>>** **(To the supervisor)** Application for Preliminary review of Thesis [Form 1] Draft of Thesis----3 copies (Draft)Abstract of Thesis [Form 2] List of publications [Form 3] **(To Academic Affairs Section of GSST)** Notification of Application for preliminary review [Form 6]
Early February	Early August	**◎Submission of Petition for Withdrawal from University** (To Academic Affairs Section of GSST)
Early March	Early September	**2. Thesis Review** **<<Documents to be submitted>>** **(To Academic Affairs Section of GSST)** ① Application for Review of Thesis [Form 7] ② Abstract of Thesis [Form 5]----3 copies ③ List of Publications [Form 3]----3 copies ④ Resume [Form 4] ⑤ Notification for Depositing Doctoral Thesis ⑥ ★Statement of Depositing Abstract of Doctoral Thesis ⑦ Soft copy of above ① to ④（Please bring USB flash drive or send by email to szkn-kyomu@jimu.kumamoto-u.ac.jp） ★In case of any compelling reasons to disclose their thesis, the submission is necessary.
March 31	September 30	**Completion of Course Work without Degree**
Within one year after completion of course work Without Degree	Within one year after completion of course work Without Degree	**◎Thesis defense** *Must finish final thesis defense within a year after the completion of Course Work without Degree. **after Final Review** **(Documents to be submitted)** ***Must submit within one month after thesis defense** **（To Academic Affairs Section of GSST）** ① Thesis (Soft copy) (please bring USB flash drive or send by email to szkn-kyomu@jimu.kumamoto-u.ac.jp） ② Statement of Depositing Doctoral Thesis
March 25 (Retroactively conferred)	September 25 (Retroactively conferred)	**Conferment of degree**

Lecture subjects and the credits

Doctoral Course

（1）Subjects for each Department

Departments	Courses・Education Programs	Subjects	Credits	
			Required	Elective
Department of Science	Course of Mathematics	Finite Group Theory and Combinatorial Structures		2
		Algebraic Geometry		2
		Algebraic Combinatorics		2
		The Theory of Surfaces		2
		Riemannian Geometry		2
		Partial Differential Equations		2
		Dynamical systems A		2
		Dynamical systems B		2
		Theory of stochastic Processes		2
		Infinite Dimensional Representation Theory		2
		Complex Geometry		2
		Commutative Algebra towards a Theory of Projective Varieties		2
	Course of Physics	Electron Theory of Solids C		1
		Electron Theory of Solids D		1
		Advanced Computational Physics II		2
		Advanced Condensed Matter Physics II		2
		Elementary Particle Physics		2
		Advanced Theory of Astrophysics II		2
		Advanced Course of Condensed Matter Photo-physics		2
		Advanced Course of Fundamental Physics		2
		Advanced Course of Ultrafast Spectroscopy		2
		Advanced Course of Mesoscopic Physics		2
		Advanced Course of High Pressure Physics II		2
		Advanced Data Science II		2
		Physics of structure and dynamics in materials II		2
		X-ray spectroscopy II		2
		Low Dimensional Condensed Matter Physics II		2
	Course of Chemistry	Advanced Physical Chemistry D		2
		Advanced Physical Chemistry E		2
		Advanced Physical Chemistry F		2
		Advanced Inorganic Chemistry D		2
		Advanced Inorganic Chemistry E		2
		Advanced Inorganic Chemistry F		2
		Advanced Organic Chemistry D		2
		Advanced Organic Chemistry E		2
		Advanced Analytical Chemistry D		2
		Advanced Analytical Chemistry E		2
		Advanced Analytical Chemistry F		2
	Course of Earth and Environmental Sciences	Physical Geochemistry		2
		Evolutionary Paleontology		2
		Earth Surface Environment System		2
		Advanced Earth Material Science		2
		Environmental Mineralogy		2
		Micropaleontology		2
		Advanced Climatology		2
		Advanced Lectures on Analysis of Atmospheric Environment		2
		Geotectonics		2
		Isotope Hydrology		2
		Marine Volcanology		2
		Advanced Watershed Environmental Science		2
		Advanced Geomagnetism		2
		Quaternary science		2
	Course of Biological Sciences	Advanced Animal Cell Biology II		2
		Advanced Animal Engineering II		2
		Advanced Developmental Biology II		2
		Advanced Molecular Genetics II		2
		Advanced Molecular cell biology II		2
		Advanced Biochemistry II		2
		Advanced Plant Molecular Biology II		2
		Advanced Plant Cell Biology II		2
		Advanced Plant Genetics II		2
		Advanced Phylogeny and Systematics II		2
		Advanced Evolutionary Behavior II		2
		Advanced Conservation Biology II		2
		Advanced Marine Ecology and Diversity II		2
		Advanced Evolutionary Ecology Ⅱ		2
		Advanced study of biodiversity Ⅱ		2
		Advanced Neuroendocrinology Ⅱ		2
		Advanced Community and Population Ecology Ⅱ		2
		Advanced RNA Biology II		2
		Advanced Bioimaging II		2
		Advanced Plant Physiology and Development II		2
	All Courses	Seminar on Science		4

Departments	Courses・Education Programs	Subjects	Credits	
			Required	Elective
Department of Advanced Industrial Science	Education Program for Environmental Conservation Engineering	Environmental Analysis in Underground Rock Mass		2
		Advanced Design of Rock Engineering		2
		Contaminant Hydrogeology		2
		Environmental Quality Preservation		2
		Agricultural Engineering for Environmentally Harmonious Co-existence		2
		River Environmental Transport Engineering		2
		Advanced Hydraulics		2
		Ocean and Coastal Disaster Prevention Engineering		2
		Applied Hydrologic Engineering		2
		River Ecology and Civil Engineering		2
	Education Program for Environmental Management and Planning	Sustainable Urban System		2
		Measurement of Environmental Benefits		2
		Regional Public Policy		2
		Landscape Design Based on Situation		2
		Infrastructure Maintenance Engineering		2
		Seismic and Damage Control Design of Structures		2
		Risk Analysis		2
		Environment and Disaster Management		2
		Frontier Science for Advanced cities		2
		Mitigation Techniques for Environmental Problems		2
	Education Program for Architecture and Environmental Planning	Urban and Architectural Environmental Psychology		2
		Advanced Course of Architectural Space Composition		2
		Analysis of Drawings by Architects		2
		Theory of Building Information Management		2
		Study of History of Architecture		2
		Advanced Architectural and Urban Environmental Engineering		2
		Advanced Urban Informatics		2
	Education Program for Building Materials and Structures	High Performance Material Design		2
		Repairing and Reinforcing of Existing Structures		2
		Advanced Structural Design		2
		Safe Controlled Wind Resistant Design		2
		Finite Element Methods in Structural Engineering		2
		Advanced Timber Structural Analysis		2
		Advanced Testing Method of Interface Strength		2
	Education Program for Advanced Mechanical Systems	Advanced Mechanics of High Temperature Strength		2
		Nonequilibrium Thermodynamics		2
		Computational Fluid Dynamics		2
		Fluid Energy Conversion		2
		Heat and Mass Transfer		2
		Numerical Heat Transfer and Fluid Flow		2
		Heat Transfer with Phase Change		2
		Multiphase Fluids Mechanics		2
		Ultra-Precision Machining		2
		Design System in Mechanical Engineering		2
		Advanced Micro/Nano System		2
		Biomechanics		2
		High-rate Processing of Materials		2
		Impact engineering		2
	Education Program for Intelligent Mechanical Systems	Advanced Theory of Plasticity and Metal Forming		2
		Intelligent Mechanical Systems		2
		Fracture Mechanics		2
		Maintenance Engineering		2
		Welding and Evaluation of Materials		2
		Advanced Sensor Technology		2
		Advanced Active Sensing Systems		2
		Robust Adaptive Control Systems		2
		Production System Design		2
	Education Program for Applied Mathematics	Advanced study in complexity analysis		2
		Harmonic Analysis		2
		Topics in Combinatorics		2
		Graph Minor and Structure Theory		2
		Stochastic processes		2
		Large deviation principle and it applications		2
		Sequential Analysis		2
		Topics in Multivariate Analysis		2
		Advanced Machine Learning		2
		Advanced Antennas and Propagation Engineering		2
		Advanced Computer Architecture I		2
		Advanced Computer Architecture II		2
		Advanced System Software		2
		Advanced Data Engineering		2
		Design of Information and Communications Network		2
		Advanced Analysis of Nonlinear Systems		2
		Applied Technology of Media Information		2
		Information Security and Infrastructure		2

Departments	Courses・Education Programs	Subjects	Credits	
			Required	Elective
		Interactive Human Information		2
		Time-series Analysis		2
	Education Program for Frontier Technology for Energy and Devices	Ultrasonic Engineering		2
		Power System Economics		2
		Power Electronics		2
		Applied Bioelectrics of Electromagnetic Energy		2
		Theory of Electronic Devices		2
		Advanced Nano-Structure Engineering		2
		Applied Engineering of Pulsed Discharge Plasma		2
		Advanced Lectures on Applied Optical Engineering		2
		Advanced Pulsed Power Technologies in Medical Science		2
		Advanced Shock Wave Bioelectrics		2
		Pulsed Power Technology		2
		Bioelectrics Engineering		2
		Advanced VLSI systems design Engineering		2
		Introduction to Crystal Structure Analysis		2
		Modern Semiconductor Physics		2
	Education Program for Human and Environmental Informatics	Model-Based Control		2
		Human-Machine Systems		2
		Cybernetics		2
		Image Information Processing		2
		Multi-modal Information Processing		2
		Advanced Statistical Signal Processing		2
		Multisource Signal Analysis and Measurements		2
	Education Program for Applied Chemistry and Biochemistry	Functional Material Engineering for Medicine		2
		Functional polymar materials for Biochemical Application		2
		Functional Inorganic Chemistry		2
		Chemistry of Organic and Polymeric Materials		2
		Advanced Bioanalytical Science		2
		Mass Transport Theory		2
		Molecular Design for Biomimetic Chemistry		2
		Application of Functional Electrode		2
		Construction and Estimation of Surface Nanostructure		2
		Computational Applied Chemistry and Biochemistry		2
		Nano-Functional Material Design		2
		Nano-scale Interfacial Electrochemistry		2
		Photofunctional Materials		2
		Functional Materials Engineering		2
		Nano-scale Inorganic Materials Engineering		2
		Surface Chemistry of Heterogeneous Catalysts		2
		Chemical Enzymology		2
	Education Program for Materials Science and Engineering	Amorphase/Nano Materials Science		2
		Materisls Processing Design		2
		Plasticity of Advanced Materials		2
		Materials Design for Advanced Ceramics		2
		Computational Materials Science		2
		Characterization of Hydrogen-Resistant Materials		2
		Special Topics on Carbon Nanomaterials		2
		Advanced Interfacial Electrochemistry		2
		Advanced Materials Interface Science & Engineering		2
		Microstructural Characterization for Advanced Materials		2
		Non-linear Continuum Mechanics		2
		Materials Structural Control Science		2
		Practical English		2
		Advanced Non-ferrous Materials		2
		Microstructure Formation and Analysis of Materials		2
		Crystal Growth Science		2
	All Education Programs	Advanced Science and Technology in Japan II		2
		Seminar on Special Projects II		4

（2）Subjects Available for All Departments

Departments	Subjects	Credits	
		Required	Elective
All Departments	Internship Programs II		2
	Presentation Award II		2

※The credits of the above subjects shall be accepted for the requirment of completion.

（3）Subjects for Science and Technology (Note 1、Note 2)

※Each subject category has multiple lecture subjects.

※The subject credited already in Master's course, can not be re-registered.

Departments	Subject Category	Subjects	Credits
			Elective
Subjects Available for All Departments	Advanced Science and Technology	Science and Technology in Society I	1 Credit per 1 Subject
		Science and Technology in Society II	
		Current Science and Technology in Japan II (Note 3)	2 Credits per 1 Subject
		English for Science and Technology (Note 3)	
	Advanced General Education (Note 4)	Understanding Contemporary Society A	1 Credit per 1 Subject
		Understanding Contemporary Society B	
		Basic Science for Technological Innovation	
		Introduction to Management	
		History of Sciences	
	English Education	Exercise of Technical English Ⅰ	1 Credit per 1 Subject
		Exercise of Technical English Ⅱ	

(Note 1)：Subjects for Science and Technology will be opened at GJEC (Global Joint Education Center for Science and Technology). For more details, please see the handouts or website at https://www.fast.kumamoto-u.ac.jp/gjec/

(Note 2)：As handling of subjects is different depending on the specialization, please confirm the standards of degree conferral of your Department as to whether these subjects are considered required or elective-required.

(Note 3)：Each subject in Advanced General Education offers multiple lectures (one credit per lecture). Although you are allowed to take more than one lecture, only one credit shall be accepted towards completion of degree requirements.

(Note 4)：The credits of these subjects are not requirement for completion, except that the students from IJEP (International Joint Education Program for Science and Technology) are required to take for completion. Except for these two subjects, Subjects for Science and Technology shall also be accepted as credit transfer from Subjects for each Departments for the students from IJEP.

Subjects and other matters

Subjects

For subjects, not only lecture classes there are also various types such as exercises, round-table discussion, seminars and special lectures, so as to encourage active participation by students (see timetable).

Research guidance

In GSST, for each student who enters the Course, a Supervisor Committee is organized consisting of three or more faculty members including the Major supervisor, and the student will be given effective and wide-ranging research guidance by the faculty members in related fields.

Lecture schedule

Time period	Time
First period	8:40-10:10
Second period	10:25-11:55
Third period	12:55-14:25
Fourth period	14:40-16:10
Fifth period	16:25-17:55
Sixth period Only for students for day and night course	18:10-19:40

(Note) one time period: 90 min., Lunch hour: 60 min.

Petitions of objection relating to evaluations of results

In Kumamoto University, in our activities we strive for strict evaluations of results.

After the announcement of results by the faculty members in charge of classes, if any student has an objection to evaluation of results, after completion of the period for acceptance of questions and concerns as indicated in “Announcements”, the student must submit a Petition of Objection relating to Results Evaluation to the Academic Affairs Section within the set period.

[Subjects for Science and Technology]

At GSST, subjects for Science and Technology have been established in order to promote creation of frontier, fusion and inter-disciplinary areas based on mutual understanding with other fields, and furnish the capability to handle a variety of issues from a birds-eye-view, in addition to high level education in each specialization. For details, please see the Global Joint Education Center for Science and Technology (GJEC): https://www.fast.kumamoto-u.ac.jp/gjec/

As handling of subjects is different depending on the specialization, please confirm the standards of degree conferral of your Department as to whether these subjects are considered required or elective-required.

Advanced Science and Technology, Advanced General Education, English Education

Science and Technology in Society I and II, in subject category of Advanced Science and Technology, are omnibus lectures by faculty members of all departments. By studying research in various fields, it is possible to acquire the ability to understand other fields, which is necessary for working on projects after entering society.

In Advanced General Education lectures in wide-ranging fields and social viewpoints are given by lecturers invited from universities, research institutes, and companies inside and outside Japan. There are five subjects: Understanding Contemporary Society A, Understanding Contemporary Society B, Basic Science for Technical Innovation, Introduction to Management, and History of Sciences. For each subject multiple lectures will be held. However, even if multiple lectures are taken in one subject, only one subject will be certified as the credit portion. Nonetheless, as these are lectures that provide valuable contents for making use of specialized knowledge and technologies learned in each major from a comprehensive standpoint after entering society, it is desirable to take as many lectures as possible without regard to acquisition of credits.

Exercise of Technical English I and II in English Education are subjects for the purpose of improvement of practical English ability for presentation at international conferences or submitting papers to specialized international journals.

Master's Course

[Presentation Award I] (1 credit, elective)

When a student gives a presentation at national or international conferences, etc., the number of times as specified in each course and Education Program, and then certified by each course and Education Program, will be certified as credit.

Note that the following are standards for certification for each department, course and Education Program.

Department of Science: Course of Mathematics

When a student gives one or more presentations at national or international conferences, etc., this will be certified as credit.

Department of Science: Course of Physics

A decision on passing or failure will be determined in the Course Meeting by the major supervisor certifying the following standards as being satisfied.

(1) The student himself/herself was the speaker.

(2) The presentation was given at a national conference or international conference.

Department of Science: Course of Chemistry

The student must apply with a program from the academic conference to the Course Chief via the major supervisor, and certification will be carried out in the Course Meeting.

Department of Science: Course of Earth and Environmental Sciences

Based on the initiative of the major supervisor, certification will be carried out by consultations in the Course.

Department of Science: Course of Biological Sciences

When a student gives one or more presentations at national or international conferences, etc., this will be certified as credit.

Department of Civil and Environmental Engineering and Architecture: Education Program for Civil and Environmental Engineering, Education Program for Urban and Regional Planning and Design

(1) Credit will be given for an oral presentation at any national or international conference, etc.

(2) Upon certification of credits, together with the verification of the facts of presentation by the major supervisor, upon examination by the Supervisor Committee, a draft on pass or failure will be made and decided by the chair of the department.

Department of Civil and Environmental Engineering and Architecture: Education Program for Architecture and Building Engineering

The presenter shall apply for certification and the major supervisor shall pass judgment on whether or not to certify the credit.

Department of Mechanical and Mathematical Engineering: Education Program for Mechanical Engineering, Education Program for Mechanical Systems

Considering a presentation at an international conference as 1 point and a presentation at a national academic conference as 0.5 point, credit will be certified for the student who acquires 1 point or more.

Department of Mechanical and Mathematical Engineering: Education Program for Applied Mathematics

When a student gives a presentation at national or international conferences, this shall be certified as credit.

Department of Computer Science and Electrical Engineering: Education Program for Electrical Engineering, Education Program for Electronic Engineering, Education Program for Computer Science

(1) 2 presentations at national conferences or 1 presentation at an international conference will be the standard within the department.

(2) English-only sessions at national conferences shall also be included as international conference, and whether or not it’s refereed is not a question.

Department of Materials Science and Applied Chemistry: Education Program for Chemistry and Bioscience, Education Program for Chemistry and Materials

When a student gives one or more presentation (orally or by poster) at national or international conferences, which shall be certified as credit.

Department of Materials Science and Applied Chemistry: Education Program for Materials Science and Engineering

When a student gives two or more presentations at a national conference or 1 or more presentations at an international conference, results shall be judged in an Education Program Meeting.

(1) Presentation in which the chief presenter is the student himself/herself.

(2) Oral presentation or poster presentation.

(3) For national conferences, only nationwide conferences are included.

(4) Whether or not to include an international conference shall be judged in an Education Program Meeting.

[Internship Programs I] (2 credits, elective)

- Research Type Internship (See “Research Type Internship Implementation Guidelines”).

Doctoral Course

[Presentation Award II] (2 credits, elective)

When a student gives one or more oral presentation at international conferences, and then that is certified for each course and Education Program, which will be certified as credit. Note that the standards for certification in each course and Education Program are as follows:

Department of Science: Course of Mathematics

When a student gives one or more presentations at international conferences, etc., this will be certified as credit.

Department of Science: Course of Physics

A decision on passing or failure will be determined in the Course Meeting by the major supervisor certifying the following standards as being satisfied.

(1) The student himself/herself was the speaker.

(2) It is an oral presentation at any international conferences.

Department of Science: Course of Chemistry

The student must apply with a program from the academic conference to the Course Chief via the major supervisor, and certification will be carried out in the Course Meeting.

Department of Science: Course of Earth and Environmental Sciences

Based on the initiative of the Academic Supervisor, certification will be carried out by consultations in the course.

Department of Science: Course of Biological Sciences

When a student gives one or more oral presentations at international conferences, this will be certified as credit.

Department of Advanced Industrial Science: Education Program for Environmental Conservation Engineering, Education Program for Environmental Management and Planning

(1) Credit will be given to oral presentation or poster presentation with oral presentation in English at international conference (including regional conference).

(2) Upon certification of credits, together with the verification of the facts of presentation by the major supervisor, upon examination by the Research Supervisor Committee, draft was made and Educational Program Chief will make decision.

Department of Advanced Industrial Science: Education Program for Architecture and Environment Planning, Education Program for Building Materials and Structures

The presenter shall apply for certification and the Academic Supervisor shall pass judgment on whether or not to certify the credit.

Department of Advanced Industrial Science: Education Program for Advanced Mechanical Systems, Education Program for Intelligent Mechanical Systems

Regarding presentation at international conference as 1 point and presentation at national academic

conference as 0.5 point, credit will be certified for the student who acquires 2 points or more.

Department of Advanced Industrial Science: Education Program for Applied Mathematics

When a student gives a presentation in English at national or international conferences, this shall be certified as credit.

Department of Advanced Industrial Science: Education Program for Computer Science and Communication Engineering, Education Program for Frontier Technology for Energy and Devices, Education Program for Human and Environment Informatics

(1) 2 presentations at international conferences will be the standard within the department.
(2) English-only sessions at national conferences shall also be included as international conference, and whether or not it's refereed is not a question.

Department of Advanced Industrial Science: Education Program for Applied Chemistry and Biochemistry

When a student gives one or more oral presentations at international conferences, this will be certified as credit.

Department of Advanced Industrial Science: Education Program for Materials Science and Engineering

When a student gives four or more presentations at national conferences, or 2 or more presentations at international conferences, or two or more national presentations and also 1 or more presentations at international conferences, results shall be judged at Education Program Meeting.

(1) Presentation in which the chief presenter is the student himself/herself.
(2) Oral presentation or poster presentation.
(3) For national conferences, only nationwide conferences are included.
(4) Whether or not to include an international conference shall be judged in an Education Program Meeting.

[Internship Programs II] (2 credits, elective)

This is practice at research institutes or companies outside school, and the period shall be for 2 weeks or so, or longer.

This aims at understanding the actual situations and needs of industry, making contact with different backgrounds or standpoints, and actual experience of research, surveying and planning, etc. at research institutes or the industry venues shall be evaluated through submission of reports.

In addition, if it is acknowledged that a student had experience corresponding to an Internship at a research institute or an industry venue inside and outside Japan, the Supervisor Committee may certify acquisition of an Internship course by submission of a report on the relevant details.

Procedures and Cautions

1. Communications with and notices to students

Communications with students and other notices are made on the Notification Board of the Kurokami South Campus and intra-school BBS on the homepage of the Graduate School of Science and Technology [GSST], and students are expected to check these every day without fail.
[BBS URL] https://www.fast.kumamoto-u.ac.jp/gsst/bbs/

2. Form of registration

Forms of registration for the school Registrar such as registered absence from school, withdrawal from school or reinstitution to school, etc. are at the following URL. When necessary, students must download and print these out or receive the forms at the window of the Academic Affairs Section of GSST.
[URL for administrative procedures and issuance of various certificates]
https://www.fast.kumamoto-u.ac.jp/gsst/jimu/

3. Registered absence or withdrawal from school

When a student is to be absent from school (when it is impossible to come to school for 3 months or longer) or leave school due to sickness or other unavoidable reason, the student must consult the guarantor and the Chief Academic Advisor, and upon obtaining a seal in the space for approval seal on the Application for Leave of Absence (attached Form 1) or Petition for Withdrawal from University (attached Form 2), submit the form to the Academic Affairs Section of GSST (with a medical certificate from a physician in the case of sickness) by one month prior to the desired date.

In such instance tuitions already paid shall not be refunded. In addition, please note that permission will not be given to students who have not paid tuition, unless the tuition has been paid.

4. Reinstitution

When a student is to be reinstated to school, the student must consult the guarantor and the Major supervisor, and upon obtaining a seal in the space for approval seal on Request for Permission to Resume studies (attached Form 3), submit the form to the Academic Affairs Section of GSST (with a medical certificate from a physician in the case of recovery from sickness) by one month prior to the desired date.

5. Other registration

In addition to the above, students must report to the Academic Affairs Section of GSST promptly when the following events occur:

1) Change of place of family register (Notification of Family Register Place Change: Attached Form 4)

2) Change of name: (Notification of Change in Name: Attached Form 5)
3) Change of guarantor: (Notification of Change of Guarantor Attached Form 6)
4) Change of address: (Notification of Change of Address: Attached Form 7)
5) When traveling abroad (Notification of Overseas Travel: Attached Form 8)
6) When conducting research activities outside the school (Notification of Off-Campus Research Activities: Attached Form 9)
7) When engaging in extracurricular activities outside the school (Notification of Off-Campus Activities: Attached Form 10)

6. Payment of tuition

Tuition must be paid in the following period.
For spring semester: April 1 - April 30, for fall semester: October 1 - October 31

There is a system for grace on collection of tuition or monthly installment payments of tuition for the person who is recognizing as having an unavoidable situation, including economic reasons. For details please make an inquiry to the Economic Support Section of the Student Life Dept., Student Support Division.

7. Exemption of tuition

There is a system of exempting the student against tuition payments, for the student who has difficulty in paying tuition due to economic reasons and who is also judged to be excellent in terms of study, or a student who is judged to have significant difficulty in paying tuition due to the death of the person who pays the tuition or who has suffered damage due to Natural Disasters or other students in similar situations and who desire exemption from tuition. For details please make an inquiry to the Economic Support Section of the Student Life Division, Student Affairs Department.

8. Personal accident insurance for student pursuing education and research system

All students take out this insurance upon entering the school. In particular, students who participate in Internships must take out Personal Accident Insurance for Student Pursuing Education and Research and Liability Insurance Coupled with Personal Accident Insurance for Student Pursuing Education and Research as prerequisites. For details, please inquire of the Student Consultation Office in the Students Life Division, Student Affairs Department.

9. Regular health checkup

Regular health checkups will be held around April of each year. All students must take checkups

without fail under the School Health and Safety Act. Dates, places and items for checkups will be submitted so these must be checked. If any student is unavoidably unable to take a checkup on the day, the student must undergo a health checkup later without fail. If any student is judged to need to undergo a detailed examination as a result of the above checkup, they must do so.

10. Health checkups for radiation handling personnel

For students who are engaged in handling radiation (X rays, RI, etc.) inside or outside school, health checkups shall be carried out regularly (July, January). Dates, places and items for checkups will be submitted.

11. Application for permission of attending school by vehicle

Students who desire to come to school by vehicle must receive issuance of a “vehicle entry pass.” Period of application, etc. shall be submitted.

12. Issuance of various certificates

When students require student registration certificates, academic transcripts, certificate of expected completion, student travel fare discount certificates, or medical examination certificates, using the Kumamoto University Portal Certificate Issuing System, students themselves are required to obtain those using their student IDs and entering in advance the necessary items at the automatic issuance machine installed at the counter of the Academic Affairs Section of GSST. It is also possible to acquire these using the automatic issuance machines installed in other departments or divisions.

If a student needs a certificate, commuter pass or student certificate other than the above, apply at the Academic Affairs Section of GSST.

For issuance, 1-3 days will be required, so please apply in advance.