Yokohama National University

Graduate School of Engineering Science

Course Completion Guidelines

Academic Year 2020

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Teaching Staff of the Graduate School of Engineering Science

Graduate School of Engineering Science Website > Faculty Members
Refer to (https://www.fse.ynu.ac.jp/english/faculty/index.html).

Academic Calendar (2020-2021)

YNU > Student Life > Academic Calendar and Timetable > Academic Calendar (2020-2021)
Refer to (https://www.ynu.ac.jp/english/student/calendar/calendar2020/).

I The Educational Goals of the Graduate School of Engineering Science

Both science and engineering have a mission to directly contribute to the welfare and sustainable development of human society. Our graduate school believes that engineers and researchers play crucial roles in pioneering new industries and science fields that lead toward a brighter future while accurately assessing various social needs and addressing environmental and other global challenges. With the goal of serving as an international hub of practical science, the school aims to foster globally competitive professionals that are well versed in both science and engineering with sound ethics and enterprising spirits to learn beyond their areas of expertise.

In our master's programs, students build their foundation in a wide range of science fields, in addition to acquiring advanced knowledge and skills in the courses designed for their own areas of expertise. They also engage in research to develop original technologies and acquire new knowledge. In this manner, they are expected to grow into highly advanced and professional engineers and researchers who can identify their own research agenda and make comprehensive judgments flexibly to respond to unknown problems based on their broad perspectives.

In our doctoral programs, students engage in advanced scientific and technical research regarding the challenges that they have identified. They are expected to grow into pioneering leaders in science and industry with abilities to make comprehensive judgments based on their broad perspectives and communicate their findings throughout our society. In other words, our graduate school produces creative and highly specialized leaders who will drive further innovations.

II Education Programs and Curriculum at the Graduate School of Engineering Science

II-1 Education Programs at the Graduate School of Engineering Science

The Graduate School of Engineering Science offers four education programs (Figure 1).

Firstly, the **T-type Engineering Degree (TED)** Program overcomes the shortcomings of excessively specialized and conventional I-shaped engineering education by offering broader perspectives. Our education model has undergone reform and moved away from parochial specialization towards a more integrated engineering education that combines a high degree of specialization and broad perspectives. The vertical line of the letter T from the TED Program represents the students' in-depth research in their area of expertise at their assigned laboratories. Students must write a master's or doctoral thesis in this program, which aims to produce highly advanced engineers and researchers. Once they have completed the program, students are awarded a master's or doctoral degree in engineering.

Secondly, the **Pi-type Engineering Degree (PED)** Program is a unique education method applied in Japan for the first time. The program is designed to produce practical engineers and researchers who can turn innovations resulting from the advancement of sciences and technologies into advanced manufacturing.

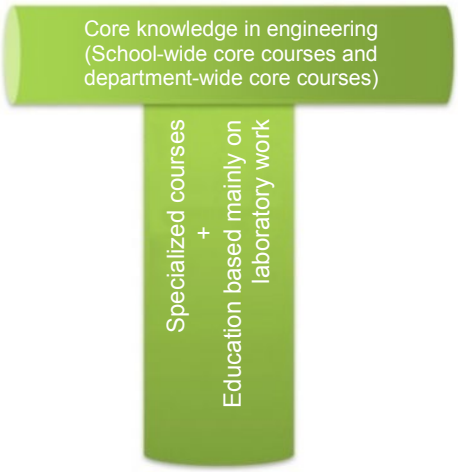
As the symbol of Pi (Π) from the PED Program represents, basic knowledge in engineering (horizontal line of Π) is combined with more than one module of specialization (two vertical lines of Π). Such a unique Yokohama-style graduate education system produces practical engineers and researchers who can respond to challenges faced by today's diversified and highly advanced industrial society. In our master's programs, students take coursework consisting of laboratory courses, exercises, and training (including long-term internship) instead of writing a master's thesis or being assigned to specific laboratories. Once they have completed the program, students are awarded a master's degree in engineering. In the doctoral programs, students are required to write a doctoral thesis, which is reviewed by keeping in mind that students are expected to become practical researchers who will lead advanced manufacturing. Once they have completed the program, students are awarded a doctoral degree in engineering.

Thirdly, YNU's original Professional Science Degree (PSD) Program enables students to acquire various necessary skills in our industrial society through workshops and internships organized to utilize the strengths of our universities while referring to the graduate education programs in science as advocated by the National Professional Science Master's Association (NPSMA). Based on their advanced knowledge in basic science, students will pursue the truth in natural science and contribute to the development of science-oriented industries in anticipation of the technological innovation for the next 10 to 20 years. They are also expected to develop knowledge in both science and engineering, as well as adequate language and other skills for working globally. In the program, workshops and internship are organized for science students of physics and chemistry to help them acquire the skills that are needed by companies. Once they have completed the program, students are awarded a master's or doctoral degree in science.

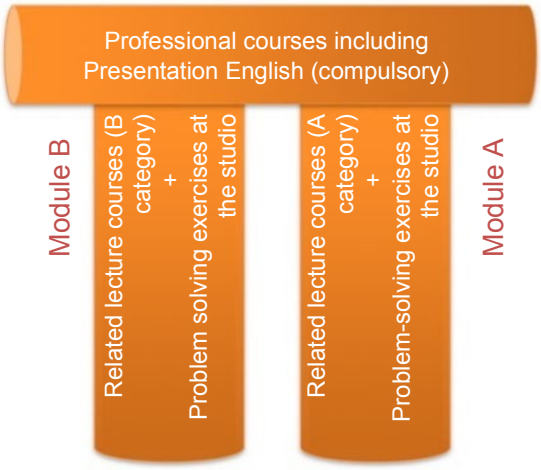
Lastly, the Science Degree Program produces deep thinkers with good judgment and advanced expertise in modern mathematics who not only pursue the truth in mathematical science, but also contribute to the development of science-oriented industries in anticipation of the technological innovation for the next 10 to 20 years. The education program is designed to apply advanced mathematical science, which is a constant and important driving force of innovation in our rapidly evolving information society. Students of mathematics are awarded a master's or doctoral degree in science.

Successful completion of the program is judged mainly based on their master's or doctoral theses.

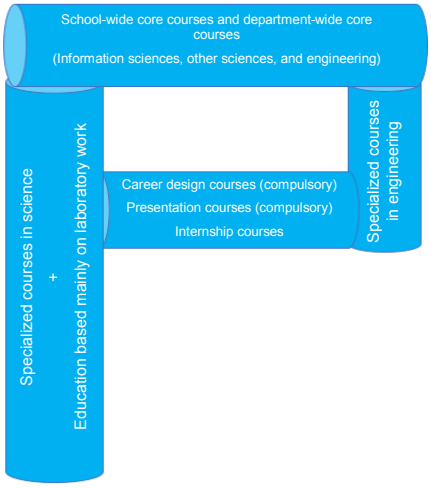
T-type Engineering Degree (TED) Program



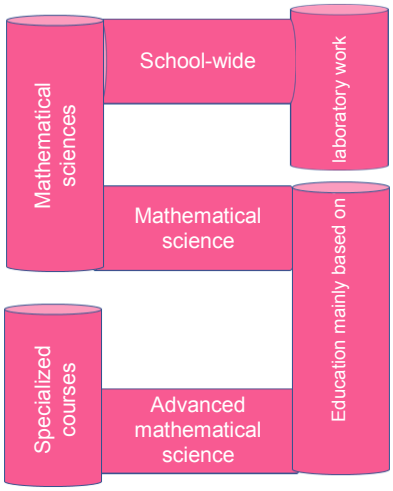
Pi-type Engineering Degree (PED) Program



Professional Science Degree (PSD) Program



Science Degree Program



(Figure 1) Structures of TED, PED, PSD, and Science Degree Programs at the Graduate School of Engineering Science

II-2 Curriculum at the Graduate School of Engineering Science (Departments and Specializations)

The departments of the Graduate Schools of Engineering Science are shown below along with the specializations covered.

Master's programs

Mechanical Engineering, Materials Science, and Ocean Engineering	Mechanical Engineering
	Materials Science Frontier
	Systems Design for Ocean-Space
	Aerospace Engineering
Chemistry and Life Science	Chemistry
	Applied Chemistry
	Chemistry Applications and Life Science
	Energy and Sustainable Chemistry
Mathematics, Physics, Electrical Engineering and Computer Science	Mathematical Sciences
	Physics
	Applied Physics
	Information Systems
	Electrical and Computer Engineering

Doctoral programs

Mechanical Engineering, Materials Science, and Ocean Engineering	Mechanical Engineering
	Materials Science Frontier
	Systems Design for Ocean-Space
Chemistry and Life Science	Chemistry
	Applied Chemistry
	Chemistry Applications and Life Science
Mathematics, Physics, Electrical Engineering and Computer Science	Mathematical Sciences
	Physics
	Applied Physics
	Information Systems
	Electrical and Computer Engineering

II-3 List of Education Programs by Department and Their Descriptions

Programs offered by each department of the Graduate School of Engineering Science are described below.

The parts marked by asterisks apply only to master's programs.

Program	Awarded degree	Description	Mechanical Engineering, Materials Science, and Ocean Engineering				Chemistry and Life Science				Mathematics, Physics, Electrical Engineering and Computer Science				
			Mechanical Engineering	Materials Science Frontier	Systems Design for Ocean-Space	Aerospace Engineering	Chemistry	Applied Chemistry	Chemistry Applications and Life Science	Energy and Sustainable Chemistry	Mathematical Sciences	Physics	Applied Physics	Information Systems	Electrical and Computer Engineering
TED	Engineering	(T-type Engineering Degree Program) In-depth education in the area of specialization is combined with education to lay the foundation in a broad range of areas, including other fields.	○	○	○	○*		○	○	○*			○	○	○
PED	Engineering	(Pi-type Engineering Degree Program) Practical education is offered in a combination of modules, each of which systematically integrates a studio (laboratory courses, exercises, and training related directly to manufacturing and conducted in a small team) with related lecture courses. In master's programs, studio deliverables are mainly used to prepare portfolios in place of a master's thesis.	○	○	○	○*			○				○	○	○
PSD	Science	(Science education with an eye to future engineering: Professional Science Degree Program) The programs aim to produce professionals with knowledge in basic science to drive technological innovation and science-oriented industries, as well as skills to work globally.					○					○			
Science	Science	(Science Degree Program) The programs produce professionals who can apply their knowledge in mathematical science and contribute to the development of science-oriented industries in anticipation of technological innovation.									○				

III Common Rules in the Graduate School

III-1 Enrollment Procedure

1. Procedures for Course Registration

Before registration, students make the Course Registration Plan in advance and get permission from the supervisor. Students cannot take courses without first enrolling through the Educational Affairs Information System. They will not receive any grades (credits) for such courses either, even if they have passed the examinations.

Course Registration Plan Sheet should be downloaded from YNU Graduate School of Engineering Science website.

(https://www.fse.ynu.ac.jp/education/index.html)

After getting permission (signature needed) from supervisor, submit to Graduate School of Engineering Science Section.(building #S8-4)

Connect to the YNU's Educational Affairs Information System from your web browser and enter the time schedule code of the course that you want to enroll in.

Go to the top page of the YNU website and login to the Educational Affairs Information System by choosing YNU > Campus Life > Y's Net for Students > Educational Affairs Information System (http://www.ynu.ac.jp/campus/student_only/affairs_system.html).

Off-campus enrollment is also possible by logging into the Educational Affairs Information System via the Matrix Authentication System at the Information Technology Service Center (https://matrixauthsv.ynu.ac.jp/portal/).

(1) Enrollment period

Spring semester:	April 10 (Friday)–April 17 (Friday)	9:00–21:00 on weekdays
Fall semester:	October 9 (Friday)–October 16 (Friday)	9:00–21:00 on weekdays

* Submit your Course Registration Plan to the Graduate School of Engineering Science Section by the following date. Make sure to keep one copy for yourself.
  Submission deadline Spring semester: April 20 (Monday) Fall semester: October 19 (Monday)

(2) Enrollment confirmation and modification period

Spring semester:	April 29 (Wednesday)–May 1 (Friday)	9:00–21:00 on weekdays
Fall semester:	October 21 (Wednesday)–October 23 (Friday)	9:00–21:00 on weekdays

* Make sure that your courses have been registered according to your enrollment plan. Any mistakes in registration or errors with the courses should be fixed by adding or deleting courses in the Educational Affairs Information System.
* No correction or addition can be made if you have failed to register any course during the enrollment period.

(3) Enrollment cancellation period

Spring semester:	May 11 (Monday)–May 15 (Friday)	9:00–21:00 on weekdays
Fall semester:	November 4 (Wednesday)–November 10 (Tuesday)	9:00–21:00 on weekdays

* You may cancel (delete) your enrollment for a particular course in the Educational Affairs Information System if the course turns out to be completely different from what you expected or for any other reasons. If you abandon a course halfway without cancelling the enrollment, you will receive "F (Fail)" as your grade for that course. You can only cancel courses during the enrollment cancellation period.
* If you modify or cancel your enrollment after the enrollment registration period, make sure to submit your revised Course Registration Plan after confirming with your academic advisor. The deadline is May 18 (Monday) for the spring semester and November 11 (Wednesday) for the fall semester.

2. General Note Regarding Enrollment

1) Courses must be registered by the specified deadline for both spring and fall semesters. In principle, the registered courses in the enrollment plan that you have submitted cannot be changed.
2) You may not take courses that you have not enrolled in.
3) You may not enroll in two or more courses in the same time slot.
4) year-long courses (offered in both spring and fall semesters) cannot be taken only in the spring or fall semester.
5) After receiving credits from a course, you cannot take the course again.

3. Course Overview

(1) Outline of each course (syllabus)

1) The basic information on each course is electronically published, along with the course objective, course plan, learning activities beyond class hours, study goals and targets, grading method, and the way the class is conducted. Starting from courses offered in academic year 2010, syllabuses can be searched by college, school, or teacher, or using any keyword. Students can browse syllabuses on the Educational Affairs Information System, which contains different items than syllabuses that are available to the public.

(2) The time schedule at the Graduate School of Engineering Science

1) The time schedule at the Graduate School of Engineering Science is not distributed in the form of a brochure.
2) Browse the schedule on the website of the Graduate School of Engineering Science (https://www.fse.ynu.ac.jp/english/education/index.html). Any date and classroom name not indicated for a course on the time schedule will be announced on the bulletin board, etc., as soon as they are finalized.

4. Course Numbering

The numbering code is a number used to indicate the specialization and level of difficulty for each course. (For more details, go to the top page of the YNU website > Education and Research > Educational Activities > Graduate Education Policy: YNU Initiative.)

* Numbering rule

<table>
<tr><th>Digit</th><th colspan="2">Indication</th><th>Alphanumeric notation</th></tr>
<tr><td>First and second digits</td><td>School</td><td>Graduate School of Engineering Science</td><td>ES*****</td></tr>
<tr><td rowspan="4">Third digit</td><td rowspan="4">Department and course (school-wide, department-wide, or specialized)</td><td>School-wide</td><td>ESa****</td></tr>
<tr><td>Mechanical Engineering, Materials Science, and Ocean Engineering</td><td>ESb****–ESe****</td></tr>
<tr><td>Chemistry and Life Science</td><td>ESf****–ESi****</td></tr>
<tr><td>Mathematics, Physics, Electrical Engineering and Computer Science</td><td>ESj****–ESm****</td></tr>
<tr><td rowspan="2">Fourth digit</td><td rowspan="2">Learning level</td><td rowspan="2">Level code of course</td><td>ES*4****–ES*6***</td></tr>
<tr><td>ES*9***</td></tr>
<tr><td rowspan="2">Fifth to seventh digits</td><td colspan="3">Numbering according to the specialization of lecture courses</td></tr>
<tr><td colspan="2">Numbering of non-lecture courses according to the specialization and type of course
* The fifth digit is fixed at "0," the sixth digit indicates the specialization, and the seventh digit indicates the type of course</td><td>ES**0**</td></tr>
</table>

5. Standard Class Hours per Course

Standard class hours per credit for a course are determined as follows:

1) For each lecture or exercise course, one credit is usually awarded for every 15-class hours, but some exercises award one credit for every 30-class hours.
2) For experiments, laboratory courses, and practices, one credit is usually awarded for every 30-class hours. If deemed necessary for educational purposes, some experiments and laboratory work award one credit for every 45-class hours.
3) If one course combines lectures, exercises, experiments, laboratory work, or practices, the number of awarded credits is calculated based on the number of class hours according to the combination of learning activities.

6. Examinations

1) The examination periods are defined in the academic calendar (*).
2) As a rule, the examination for each course is conducted on the day of the week and hour specified in the time schedule.
3) In general, no class will be conducted except for examinations during the examination period, with the exception of some classes.
4) Please obey the following rules when you are taking an examination:
   - During an examination, display your student ID on your desk.
   - Disciplinary action will be taken for any misconducts during an examination pursuant to Article 24 of the Graduate School General Regulation.

* The academic calendar of YNU is organized in two semesters and six terms. Courses are offered either by semester or by term. The Graduate School of Engineering Science conducts courses in two semesters—spring and fall.

7. Credit Recognition and Grades

1) Grades are determined based on scores from examinations and written assignments.
2) As a general rule, no additional or make-up examinations will be held.
3) Check your grades in the Educational Affairs Information System. Grades from the spring semester are available from the first day of the fall semester in early October, while grades from the fall semester are available from the first day of the spring semester in early April of the next academic year.
4) The completion of a program requires a GPA (Grade Point Average) of 2.0. In order to calculate the GPA, a grade point is assigned to each grade. The grade point of each course taken by a student is multiplied with the number of credits assigned for that course. The student's GPA is the sum of all the courses taken divided by the total number of credits for the enrolled courses.
5) The number of credits from cancelled courses is deducted from the number of credits from registered courses. The grade for any abandoned course after the specified cancellation deadline will be "F (Fail)."
6) You can retake a course if you have received a grade of "F (Fail)." If the course is successfully completed, the grade from the retaken course is counted in the GPA, although the number of credits from that course will not be added to the denominator for calculating the GPA.

Grade	Grade Point	Score	Pass/Fail
Excellent *	4.5	100–90	Pass
Very good *	4	89–80	
Good	3	79–70	
Fair	2	69–60	
Fail	0	59–0	Fail

$$\text{GPA} = \frac{\Sigma\,(\text{GP} \times \text{Number of credits})}{\text{Total number of credits from registered courses}}$$

* Grading criteria
The grade of "Excellent" with scores of 90 or more is awarded for surpassing the learning goals.
The grade of "Very Good" with scores between 80 and 89 is awarded for achieving the learning goals.

8. Registration for Internship course

Students who take a Internship course should be submitted “Internship Report” to the Graduate School of Engineering Science Section by email (ses.daigakuin-eng@ynu.ac.jp), after implementation of the internship.

Necessary designated form should be downloaded from YNU Graduate School of Engineering Science website.

(https://www.fse.ynu.ac.jp/english/education/index.html)

9. Enrollment of College-level Courses

Master's programs

In the Graduate School of Engineering Science, master's students in TED, PSD, and Science Programs may substitute up to 10 credits from specialized courses with credits from college-level courses according to the instruction or advice from their advisors. (The PED Program allows students to take college-level courses, but the credits cannot be counted towards the completion of the program.)

Enrollment is possible only with the following specified courses. The number of assigned credits is as indicated for each course.

Note that the **specialization in mechanical engineering** for both TED and PED Programs does not permit the enrollment of college-level courses.

Department	Specified Course
Mechanical Engineering, Materials Science, and Ocean Engineering	Internal Combustion Engines, Microstructure and metallurgy, X-ray Diffraction in Materials Science , Physical Metallurgy and Exercise I, Physical Metallurgy and Exercise II, Strength of Crystalline Solids , Strength and Fracture of Materials , Electronic Properties of Solids , Mathematical Theory of Plasticity , Metal Forming, Solidification Theory, Computational Materials Science, and Environment Conscious Materials
Chemistry and Life Science	Physical Organic Chemistry, Introduction to Solid State Physics, Quantum Chemistry, Coordination Chemistry, Structural Biochemistry, Organometallic Chemistry, Design of Organic Synthesis , Structural Chemistry, Cosmogeochemistry , Polymer Chemistry 1 , Synthetic Organic Chemistry , Electrochemistry B , Inorganic Solid State Chemistry, Polymer Chemistry 2, Inorganic Material Chemistry , Chemistry of Organic Functional Materials, Polymer Chemistry, Fundamental Catalytic Chemistry, Applied Electrochemistry, Analytical Chemistry 2B, Analytical Chemistry 3, Design and Drawing of Machinery and Apparatus, Introduction to Industrial Chemistry, Thermodynamics for energy conversion , Engineering Materials, Process System Engineering, Strength and Fracture of Materials, Safety Engineering for Energetic Materials , Environmental Engineering 2, Environmental and Energy System Theory, Separation science and engineering, Fluid engineering, Risk engineering , Environmental Engineering 1, Chemical Reaction Engineering, Bioengineering 1, and Bioengineering 2
Mathematics, Physics, Electrical Engineering and Computer Science	Advanced Electrical and Computer Engineering, Electrical Energy Engineering, Electrical Energy System Engineering , Materials Science and Technology for Electricity, Power Electronics , Basic Control Theory, Digital Control , System Engineering, Nano-Electronics, Semiconductor Engineering , Electronic Devices , Integrated electronics , Analog Circuit Design , Optoelectronics, Electromagnetic, Wave Engineering, Digital Communication, Soft Computing, Quantum Statistical Mechanics, Quantum Mechanics 3, Electromagnetism 3, Solid State Physics 1, Solid State Physics 2, High Energy Physics, Galois Theory and Number Theory , Manifold Theory , Functional analysis , Probability Theory with Applications , Stochastic Models, and Engineering Mathematics Statistics

Doctoral programs

Students of doctoral programs may not take college-level courses except for courses of foreign languages (introductory level) and Japanese language (note that credits from these courses are not counted towards the completion of programs).

10. List of Items to be Submitted

The following lists items to be submitted from admission until graduation, along with the submission period and place of submission.

Master's programs

Submission period	Required document	Target programs	Place of submission	Remarks
After the orientation	Enrollment adjustment sheet	TED, PSD, SD, PED	Graduate School of Engineering Science Section	Adjustment sheet for practical courses with enrollment limits
Enrollment period for the spring semester in the first year	Course Registration Plan	TED, PSD, SD, PED	Graduate School of Engineering Science Section	The plan must be signed and affixed with a seal by the academic advisor.
Enrollment period for the fall semester in the first year	Course Registration Plan	TED, PSD, SD, PED	Graduate School of Engineering Science Section	The plan must be signed and affixed with a seal by the academic advisor.
After the fall semester in the first year	Studio deliverables	PED	Affiliated laboratory	Deliverables from studio courses taken in one year
Enrollment period for the spring semester in the second year	Course Registration Plan	TED, PSD, SD, PED	Graduate School of Engineering Science Section	The plan must be signed and affixed with a seal by the academic advisor.
Enrollment period for the fall semester in the second year	Course Registration Plan	TED, PSD, SD, PED	Graduate School of Engineering Science Section	The plan must be signed and affixed with a seal by the academic advisor.
After the fall semester in the second year	Studio deliverables	PED	Affiliated laboratory	Deliverables from studio courses taken in one year
After implementation of the internship	Internship report	TED, PSD, SD, PED	Graduate School of Engineering Science Section	Students who take a internship course should be submitted it by mail.
Deadline specified by each specialization	Master's thesis	TED, PSD, SD	According to the instruction given in each specialization	
	Portfolio	PED		

Doctoral programs

Submission period	Required document	Target programs	Place of submission	Remarks
Enrollment period for the spring/fall semester	Course Registration Plan	TED, PSD, SD, PED	Graduate School of Engineering Science Section	The plan must be signed and affixed with a seal by the academic advisor.
After the fall semester	Studio deliverables	PED	Affiliated laboratory	Deliverables from studio courses taken in one year
After implementation of the internship	Internship report	TED, PSD, SD, PED	Graduate School of Engineering Science Section	Students who take a internship course should be submitted it by mail.
Year of completion	Doctoral thesis	TED, PSD, SD, PED	Graduate School of Engineering Science Section	Detailed instructions from the Graduate School of Engineering Science will be provided by the academic advisor.

III-2 Foreign Language Courses

1. Enrollment of Introductory Foreign Language Courses (University-wide)

Students who wish to enroll in foreign language courses should consult with the Graduate School of Engineering Science Section in advance.

Note that undergraduate students are given priorities in the enrollment of introductory foreign language courses. Anyone interested will be informed of available courses after checking the enrollment by undergraduate students. Enroll in available courses during the period for enrollment and modification.

2. Enrollment of Japanese Language Courses

Japanese language courses are intended for international students.

International students must take placement tests (so that they can be placed in suitable classes).After placement, enroll in the Japanese language courses offered by the International Student Center. (If credits are needed, take Japanese language courses for international exchange. If not, take university-wide Japanese language courses.)

Check the schedule of placement tests on the website of the International Student Center (http://www.isc.ynu.ac.jp).

3. Credits from Foreign Language Courses

Credits from Introductory Foreign Language Courses and Japanese Language Courses are not counted as credits needed to complete a study program. However, a student who has taken courses in one foreign language (non-native) during their master's or doctoral program may be exempted from language examination during their doctoral thesis defense.

The abovementioned language examination is conducted for international students in a non-native language (including Japanese).

III-3 Graduate General Education and Minor Programs

Graduate General Education： Graduate school general education programs foster both skills and knowledge suitable for a master course student. Students with different academic backgrounds, irrespective of the major humanities/sciences division, will meet in a class. They will cultivate practical thinking and research competency manageable not only globally but also locally.

Details will be announced later.

Minor programs are offered to meet the diverse learning needs of students and to motivate them by acknowledging the outcome of their systematic learning in specific areas through specific assignments. Students who satisfy the requirements to complete the program are awarded certificates, and the completion is stated in their transcripts. Requirements for enrollment vary from one program to another. For more details, go to the page of http://www.ynu.ac.jp/education/ynu_education/vice_special.html.

III-4 Important Notes for International Students

1) Make sure to participate in the orientation for incoming international students organized at the beginning of each semester (April and October).
2) Please try to learn Japanese as most courses at the Graduate School of Engineering Science are offered in Japanese, although some courses are offered in English. There are also other regular courses related to Japanese language that are offered at YNU. For more information, please refer to the website of the International Student Center (http://www.isc.ynu.ac.jp/study/).
3) Some departments offer lectures designed for international students. Make the most of this opportunity by following the instruction and advice from your advisor.
4) Lectures offered at a college can be taken if the intended research requires the relevant basic knowledge provided in those lectures. Take those lectures as necessary according to the instruction and advice from your advisor. (Refer to "Enrollment to college-level courses" on page 8.)
5) Join an appropriate insurance as you may experience illness, accident, or unexpected trouble during your study period.
6) Matters related to scholarships, dormitories, and the welfare of international students are handled by the Student Support Division and the International Affairs Division of the Student Affairs and International Relations Department (both located on the second floor of the International Student Center). If necessary, consult these divisions or the Graduate School of Engineering Science Section.
7) A tutor is assigned to each international student during the first year of their studies. Make the most of the assistance from the tutor by consulting all matters related to your study program.

IV T-type Engineering Degree (TED) Program, Professional Science Degree (PSD) Program, and Science Degree Program

IV-1 Process from the Planning of Enrollment and Research to Graduation (Obtaining the Degree)

1. Purpose

Students of the T-type Engineering Degree (TED) Program, Professional Science Degree (PSD) Program, and Science Degree Program are assigned to laboratories for in-depth specialized learning. The research and education are conducted mainly in the form of courses and instructions on writing a thesis.

Courses offered in master's programs are classified into categories and types mainly according to their contents and intended targets. Categories mainly depend on the contents of courses and are divided into information course group, science course group, engineering course group, and professional course group.

Types mainly depend on the intended target and are divided into core courses, major courses, and specialized courses.

The study and research in these courses must be planned to clarify the purpose for enrolling in a master's or doctoral program and to achieve the purpose (obtaining a degree).

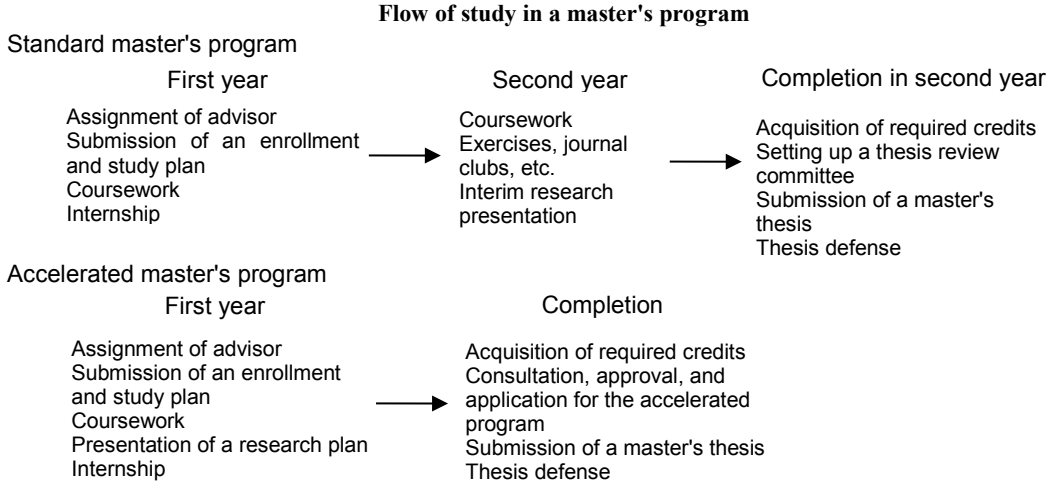
2. Academic Advisors and the Study Plan (Enrollment and Research)

1) An academic advisor is assigned immediately after a student is admitted to a program.
2) Each student must develop a Course Registration Plan according to the purpose of their study, academic background, and learning ability while seeking due guidance and advice from the advisor, and obtain approval.
3) Complete the enrollment within the enrollment period and submit the Course Registration Plan with the signature and seal of the academic advisor attached (refer to page 5).
4) Refer to page 5 to learn how to enroll in courses.
   The Course Registration Plan must be followed through in each academic year.
5) The progress of the plan must be discussed with the academic advisor in each academic year.

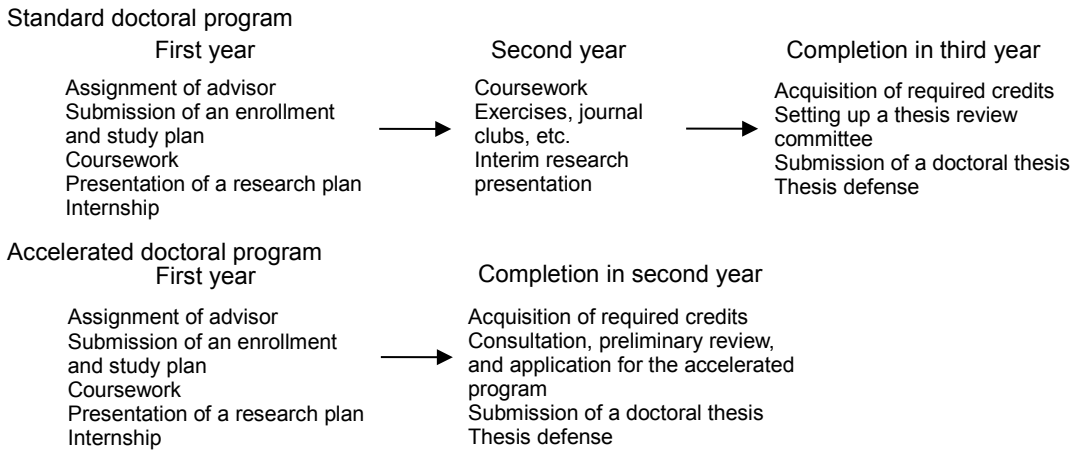
3. Flow of Study

Study refers to students' initiatives to learn and academically train themselves. The flows of study at our master's and doctoral programs are presented below.

Flow of study in a master's program



Flow of study in a doctoral program



4. Necessary Credits and Requirements for Graduating

The number of necessary credits and other requirements for completing the master's and doctoral programs are presented in the following table.

Requirements for completing the TED/PSD/Science Programs at the Graduate School of Engineering Science

Master's programs

<table>
<tr><th colspan="2">Courses</th><th colspan="2">Necessary number of credits</th></tr>
<tr><td rowspan="4">Core courses</td><td>Information course group</td><td>At least 2 credits</td><td rowspan="4">At least 6 credits</td></tr>
<tr><td>Science course group</td><td rowspan="3">At least 2 credits from courses or course groups specified by the department [*1]</td></tr>
<tr><td>Engineering course group</td></tr>
<tr><td>Professional course group</td></tr>
<tr><td rowspan="3">Major courses</td><td>Information course group</td><td rowspan="3">At least 2 credits from courses or course groups specified by the department [*1]</td><td rowspan="3">At least 4 credits</td></tr>
<tr><td>Science course group</td></tr>
<tr><td>Engineering course group</td></tr>
<tr><td colspan="2">Specialized courses</td><td colspan="2">At least 10 credits from courses specified by the department. Exercise courses (4 credits in total) are required. [*2]</td></tr>
<tr><td colspan="2">Number of necessary credits (total)</td><td colspan="2">At least 30 credits (with GPA of 2.0 or greater)</td></tr>
</table>

*1: The TED Program only requires credits from the engineering course group.

The PSD Program only requires credits from the science course group.

The Science Degree Program requires the following courses.

< Required core courses >

At least two credits from Mathematical Science:Algebra, Mathematical Science:Geometry, Mathematical Science: Analysis, and Mathematical Science:Data Science.

< Required major courses >

Advanced Mathematical Science:Algebra, Advanced Mathematical Science:Geometry, Advanced Mathematical Science:Analysis, Advanced Mathematical Science:Probability A, Advanced Mathematical Science:Probability B, and Advanced Mathematical Science:Statistics.

*2: Refer to pages 28 through 37 to find out courses specified by each department and other required courses.

※ Courses from other departments and specializations can be taken as department-wide core courses or specialized courses.

Doctoral programs

Courses	Necessary number of credits
Advanced exercises	3 credits
Number of necessary credits (total)	At least 9 credits (with a GPA of 2.0 or greater)

5. Cross-enrollment Between Master's and Doctoral Programs

Master's programs

Students of master's programs may not take courses offered in doctoral programs.

Doctoral programs

Students of doctoral programs may take lecture courses offered in master's programs according to the guidance and advice from their advisors (lectures only).

6. Enrollment in Courses Offered by Other Graduate Schools or Other Universities

Master's and doctoral programs

According to the guidance and advice from their advisors, students can substitute up to 10 credits from specialized courses by taking courses offered at other departments in the Graduate School of Engineering Science, as well as Graduate General Education, Graduate School of Urban Innovation, Graduate School of Environment and Information Science, Graduate School of Education, Graduate School of International Social Sciences (up to six credits only), and other graduate schools from partner universities of YNU for credit transfers (lectures only).

Prior to any such enrollment, contact the Graduate School of Engineering Science Section. The enrollment cannot be made without the approval of the faculty responsible for the intended course.

7. Accelerated Programs

Master's programs

A standard master's program lasts two years, but it can be completed after at least one year of enrollment if a student has conducted excellent research that was acknowledged by the faculty council to have satisfied requirements for accelerated programs.

Doctoral programs

A standard doctoral program lasts three years, but it can be completed after at least one year of enrollment if a student has conducted excellent research that was acknowledged by the faculty council to have satisfied requirements for accelerated programs.

8. Academic Thesis

No credits are given for academic theses for obtaining a degree.

(1) Thesis defense, etc.

Students who are certain that they satisfy the requirements for completing their master's or doctoral programs must apply for a thesis defense. The application must be filed while they are still enrolled. Submission deadlines for applications are presented below. Students will receive notifications on the procedure and schedule for completing each program at appropriate timings from the Graduate School of Engineering Science Section through their academic advisors. For more details on the thesis defense, refer to the Thesis Defense Regulation of YNU's Graduate School of Engineering Science.

Master's programs	Doctoral programs
Follow the deadlines specified according to specializations	December for completion in March
	March for completion in June
	June for completion in September
	September for completion in December

(2) Awarded degrees and specializations

The following academic degrees are awarded according to the department in which a master's or doctoral program is completed.

Program	Department	Specialization	Degree
Master's program	Mechanical Engineering, Materials Science, and Ocean Engineering	Mechanical Engineering	Master of Engineering
		Materials Science Frontier	Master of Engineering
		Systems Design for Ocean-Space	Master of Engineering
		Aerospace Engineering	Master of Engineering
	Chemistry and Life Science	Chemistry	Master of Science
		Applied Chemistry	Master of Engineering
		Chemistry Applications and Life Science	Master of Engineering
		Energy and Sustainable Chemistry	Master of Engineering
	Mathematics, Physics, Electrical Engineering and Computer Science	Mathematical Sciences	Master of Science
		Physics	Master of Science
		Applied Physics	Master of Engineering
		Information Systems	Master of Engineering
		Electrical and Computer Engineering	Master of Engineering
Doctoral programs	Mechanical Engineering, Materials Science, and Ocean Engineering	Mechanical Engineering	Doctor of Engineering
		Materials Science Frontier	Doctor of Engineering
		Systems Design for Ocean-Space	Doctor of Engineering
	Chemistry and Life Science	Chemistry	Doctor of Science
		Applied Chemistry	Doctor of Engineering
		Chemistry Applications and Life Science	Doctor of Engineering
	Mathematics, Physics, Electrical Engineering and Computer Science	Mathematical Sciences	Doctor of Science
		Physics	Doctor of Science
		Applied Physics	Doctor of Engineering
		Information Systems	Doctor of Engineering
		Electrical and Computer Engineering	Doctor of Engineering

(3) Evaluation standards for academic theses

Theses papers are evaluated according to the following standards set by each department.

	Master's programs	Doctoral programs
Mechanical Engineering, Materials Science, and Ocean Engineering	Engineering (TED) 1. Original research that was conducted with a suitable choice of theme; 2. Results of the research make a significant academic or practical contribution; 3. Results are reliable; and 4. The reasoning, composition, and expression in the thesis are appropriate.	Engineering (TED) In addition to the standards for master's programs presented on the left: 1. The research produces new and advanced results that substantially contribute to the development of the field; and 2. The thesis content is good enough to be published in scientific journals.
Chemistry and Life Science	Engineering (TED) and Science (PSD) 1. The research project is appropriate and meaningful according to scientific and technological standards in the area of specialization; 2. The methodology for the research project is appropriate and meaningful according to scientific and technological standards in the area of specialization; and 3. The master's thesis is structured and written in a logical and original manner and produces significant results in academic or engineering terms.	Engineering (TED) and Science (PSD) 1. The research project is appropriate and meaningful according to scientific and technological standards in the area of specialization; 2. The methodology for the research project is appropriate and meaningful according to scientific and technological standards in the area of specialization; and 3. The doctoral thesis is structured and written in a logical and original manner, produces significant results in academic or engineering terms, and has a universal value.
Mathematics, Physics, Electrical Engineering and Computer Science	Engineering (TED), Science (PSD), and Science Degree 1. The research agenda of the thesis is useful in engineering terms, has a universal scientific value, or appropriate in other ways; 2. The research method in the thesis is appropriate (e.g., experiment method, calculation method, etc.); 3. Research results and consideration are appropriate, logical, and original; and 4. The structure and expressions used in the thesis are appropriate.	Engineering (TED), Science (PSD), and Science Degree 1. The research agenda of the thesis is useful in engineering terms, has a universal scientific value, or appropriate in other ways; 2. The research method in the thesis is appropriate (e.g., experiment method, calculation method, etc.); 3. Research results and consideration are appropriate, logical, and original; and 4. The structure and expressions used in the thesis are appropriate.

(4) Ethical review

Immediately before any doctoral thesis defense (a thesis revised after the preliminary review of all departments in the Graduate School of Engineering Science), the academic advisor will check that it has proper copyright protection by using iThenticate. The application is then submitted to the thesis review committee. Before the final review, the committee examines the thesis while also checking that proper consideration has been given to copyright. The committee states the review results in the doctoral thesis review report.

11. Working Students

Aside from the method mentioned earlier, students admitted under the exceptional educational method stipulated in Article 14 of the Standards for the Establishment of Graduate Schools (hereinafter called "working students") will be enrolled in the following manner:

(1) Exceptions for working students

1) Working students must attend courses full time for at least one year of the standard period for each program (two years in master's programs and three years in doctoral programs).
2) Courses are offered in the evening on working days (17:50–19:20) as an exception, although working students may also take courses offered in the daytime and all other timeslots.
3) During the mandatory full-time study for one year in a master's program, they must make an enrollment plan to acquire the necessary credits from evening classes (17:50–19:20) in order to properly conduct their master's research. In other words, during this period, daytime courses should only be taken when such courses are not offered in the evening.
4) Once admitted, they must seek guidance from their academic advisors and develop an enrollment and study plan for two years of master's program or three years of doctoral program.
5) If it is impossible to complete the program in the standard period of study due to professional reasons, they should consider making an enrollment and study plan for three to four years of master's program or four to six years of doctoral programs.
6) Working students should declare and gain approval for any change in their enrollment and study plan made as an exception.

(2) Exceptions for making the most of available courses

Non-working students may take courses according to the abovementioned exceptions when their academic advisors acknowledge that there is such a need.

V Pi-type Engineering Degree (PED) Program

V-1 Process from the Planning of Enrollment and Research to Graduation (Obtaining the Degree)

1. Purpose

The advanced manufacturing pursued in PED Programs refers to the following set of activities by scientists and engineers who engage in creative designing:

- Develop the best system under multiple conflicting technical constraints.
- Incorporate results from advanced analysis and measurements into manufacturing accurately.
- Embody free and flexible ideas and concepts under given conditions.
- Conduct design and development based on accurate knowledge while considering the environment and safety.
- Apply basic principles and design future manufacturing to add specific functions.

The education and guidance under PED Programs are directed by the following basic policy to cultivate practical engineers and researchers who will lead advanced manufacturing.

(1) The education is mainly conducted through laboratory courses, exercises, and trainings in a small group. These activities that are directly linked with manufacturing are called "studios." As part of the studio work, we recommend doing long-term internships conducted at companies in close partnership with the Graduate School of Engineering Science.

(2) Students must take "modules" that are systematically composed of studios and internship courses.

According to this basic policy, no master's thesis is assigned in master-level PED Programs. The completion is judged based on the portfolio compiling the results from a studio. In each studio, a sufficient amount of time is designated for paper assignments and presentation guidance to strengthen students' logical thinking and scientific writing skills, as well as to cultivate the communication skills that are required for them to play active roles in the society as practitioners. Similar to other programs, each student is asked to write a doctoral thesis in doctor-level PED Programs, but they are evaluated as practitioners in pursuit of advanced manufacturing, rather than researchers who are engaging in basic research.

Before beginning their studies, each student must develop an adequate study plan to clarify the purpose for enrolling in a master's or doctoral program and to achieve the purpose (obtaining a degree).

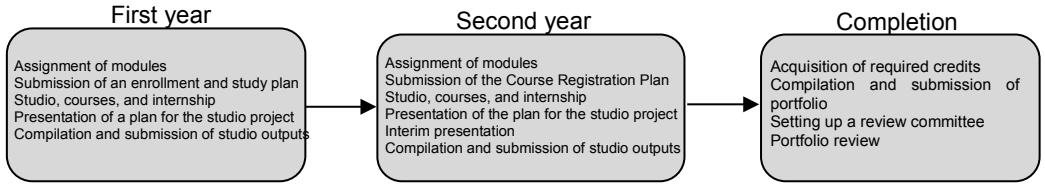
2. Academic Advisors and the Study Plan

1) Modules and an academic advisor are assigned immediately after a student is admitted to a program (with possible adjustments if there are more interested students than available space in respective modules).
2) Each student must develop a Course Registration Plan according to the purpose of their study, academic background, and learning ability while seeking due guidance and advice from the module manager of the assigned module or the academic advisor, and obtain approval.
3) Complete the enrollment within the enrollment period and submit the enrollment and study plan with the signature and seal of the academic advisor attached (refer to page 5).
4) Refer to page 5 to learn how to enroll in courses.
5) The Course Registration Plan must be followed through in each academic year.
6) As necessary, the Course Registration Plan must be revised properly according to the guidance and advice from the module manager of the assigned module or the advisor.

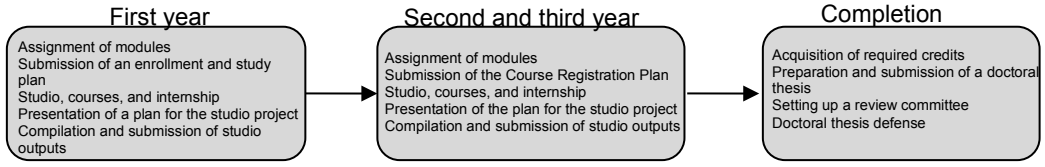
3. Flow of Study

The flow of study is outlined below.

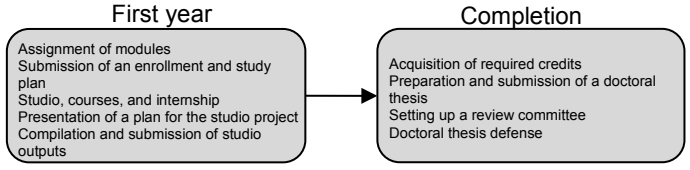
Flow of study in a master's program



Flow of study in a doctoral program



Accelerated program (mainly for working doctoral students with solid accomplishments)



4. Necessary Credits and Requirements for Graduating

The number of necessary credits and other requirements for completing the master's and doctoral programs are presented in the following table.

Requirements for completing the PED Program at the Graduate School of Engineering Science

Master's programs

<table>
<tr><th colspan="2">Courses</th><th colspan="2">Necessary number of credits</th></tr>
<tr><td rowspan="2">core courses</td><td>Information course group
Science course group
Engineering course group</td><td>At least 2 credits from information course group</td><td rowspan="2">At least 6 credits</td></tr>
<tr><td>Professional course group</td><td>2 credits required from Presentation English</td></tr>
<tr><td colspan="2">Specialized module [*1]</td><td colspan="2">At least 4 modules (24 credits)
(Completion of 1 module requires at least 4 credits from studio courses and 2 credits from the course group that makes up the module [*3])</td></tr>
<tr><td colspan="2">Number of necessary credits (total)</td><td colspan="2">At least 30 credits (with a GPA of 2.0 or greater)</td></tr>
</table>

*1 Internship courses are assigned according to each assigned module in a master-level PED Program. They are conducted in close partnership with the manufacturing industry. The number of necessary credits is determined based on the internship period. Assignments are determined based on discussions between the partners and the Graduate School of Engineering Science. The school plans internship courses to accomplish the educational goals of the PED Program, so students can substitute one studio from a specialized module that is closely related to the internship assignment (pay attention to the note below marked with asterisk). For this reason, remember that an internship course that can substitute a studio course is different from any internship program carried out by students based on their free will and initiatives.

*2 A studio course that makes up a specialized module (master's program) is usually conducted in one semester. In principle, only one studio course from studio course hours can be taken in one semester.

*3 It is possible to take multiple subjects that make up the module in one semester.

The same subject cannot be used as a substitute for more than one specialized module.

* Note regarding the substitution of a studio course with an internship course

- Anyone who wishes to substitute a studio course with an internship course should register both courses during enrollment. [Time schedule code: N000000, Course name: Studio course (for substitution)]
- The module manager proposes the substitution of studio with internship to the academic affairs and library officer of the graduate school.
- Submit an internship report via email to the Graduate School of Engineering Science Section immediately after the completion of an internship program. After receiving the report, the Graduate School of Engineering Science Section will proceed to substitute the corresponding studio. The report template can be downloaded from the website of the Graduate School of Engineering Science.
- Any courses that substituted a studio will be marked with an "i" at the end of the course name in transcripts or the like.

Doctoral programs

Courses	Necessary number of credits
Specialized module (doctor) [*4,5]	At least 1 module

	(completion of 1 module requires at least 4 credits from studio courses and 2 credits from the course group that makes up the module)
Number of necessary credits (total)	At least 9 credits (with a GPA of 2.0 or greater)

*4 A doctoral thesis written and submitted to complete the Pi-type Engineering Degree (PED) Program is reviewed with respect to the candidate's level of achievement as a practice-oriented research. Similarly, the performance in a doctor-level studio course that makes up a specialized module is evaluated by a faculty group. The module will be offered until the candidate can demonstrate adequate accomplishment.

*5 For the same reason as above, an internship in the doctor-level PED Program is conducted in close partnership with the manufacturing industry until the candidate can demonstrate adequate accomplishment. The internship can substitute one studio among special modules from the candidate's doctoral program that are closely related to the internship assignment.

5. Cross-enrollment Between Master's and Doctoral Programs

Master's programs

Students of master's programs may not take courses offered in doctoral programs.

Doctoral programs

Students of doctoral programs may take lecture courses offered in master's programs according to the guidance and advice from their advisors (lectures only). Note however, that they cannot substitute lectures and other courses (two credits) that are needed to complete a specialized module.

6. Enrollment in Courses Offered by Other Graduate Schools or Other Universities

Master's and doctoral programs

According to the guidance and advice from their module managers and advisors, students can obtain credits by taking courses offered at the Graduate School of Engineering Science that are not included in their modules, Graduate General Education, and lecture courses offered at other graduate schools of YNU that are our credit transfer partners (Graduate School of Urban Innovation, Graduate School of Environment and Information Science, Graduate School of Education, and Graduate School of International Social Sciences), as well as other graduate schools from the partner universities of YNU for credit transfers(lectures only). Note however, that they cannot substitute lectures and other courses (two credits) that are needed to complete a specialized module.

Prior to any such enrollment, contact the Graduate School of Engineering Science Section. The enrollment cannot be made without the approval of the faculty responsible for the intended course. Students should obtain the approval of the instructor in charge of the course in advance.

7. Accelerated programs

Master's programs

A standard master's program lasts two years, but it can be completed after at least one year of enrollment if a student has

conducted excellent research that was acknowledged by the faculty council to have satisfied requirements for accelerated programs.

Doctoral programs

A standard doctoral program lasts three years, but it can be completed after at least one year of enrollment if a student has conducted excellent research that was acknowledged by the faculty council to have satisfied requirements for accelerated programs.

8. Academic theses

No credits are given for a portfolio developed during the master-level PED Program nor for a doctoral thesis written during the doctor-level PED Program for obtaining a degree.

(1) Thesis defense, etc.

Students who are certain that they satisfy the requirements for completing their master's or doctoral programs must apply for a portfolio review or thesis defense. The application must be filed while they are still enrolled. Submission deadlines for applications are presented below. Students will receive notifications on the procedure and schedule for completing each program at appropriate timings from the Graduate School of Engineering Science Section through module managers or their academic advisors.

Master's programs	Doctoral programs
Follow the deadlines specified according to specializations	December for completion in March March for completion in June June for completion in September September for completion in December

(2) Awarded degrees and specializations

The following academic degrees are awarded according to the department in which a master's or doctoral program is completed.

Program	Department	Specialization	Degree
Master's program	Mechanical Engineering, Materials Science, and Ocean Engineering	Mechanical Engineering	Master of Engineering
		Materials Science Frontier	Master of Engineering
		Systems Design for Ocean-Space	Master of Engineering
		Aerospace Engineering	Master of Engineering
	Chemistry and Life Science	Chemistry Applications and Life Science	Master of Engineering
	Mathematics, Physics, Electrical Engineering and Computer Science	Applied Physics	Master of Engineering
		Information Systems	Master of Engineering
		Electrical and Computer Engineering	Master of Engineering
Doctoral programs	Mechanical Engineering, Materials Science, and Ocean Engineering	Mechanical Engineering	Doctor of Engineering
		Materials Science Frontier	Doctor of Engineering
		Systems Design for Ocean-Space	Doctor of Engineering
	Chemistry and Life Science	Chemistry Applications and Life Science	Doctor of Engineering
	Mathematics, Physics, Electrical Engineering and Computer Science	Applied Physics	Doctor of Engineering
		Information Systems	Doctor of Engineering
		Electrical and Computer Engineering	Doctor of Engineering

(3) Evaluation standards for academic theses

Portfolios and theses papers are evaluated according to the following standards set by each department.

	Master's programs (portfolios)	Doctoral programs
Mechanical Engineering, Materials Science, and Ocean Engineering Chemistry and Life Science Mathematics, Physics, Electrical Engineering and Computer Science	1. Appropriate choice of theme and studio agenda; 2. Results of the research make a significant academic or practical contribution; 3. Results are acknowledged to have a high level of accomplishment and are reliable; 4. The structure and expressions used in the portfolio are appropriate; 5. Adequacy of literature; and 6. Consistent logical structure. 7.	1. The research agenda of the thesis is useful in engineering terms or appropriate in other ways; 2. The research method in the thesis is appropriate (e.g., experiment method, calculation method, etc.); 3. Research results and consideration are appropriate, logical, and original; and 4. The structure and expressions used in the thesis are appropriate.

(4) Ethical review

Immediately before any doctoral thesis defense (a thesis revised after the preliminary review of all departments in the Graduate School of Engineering Science), the academic advisor will check that it has proper copyright protection by using iThenticate. The application is then submitted to the thesis review committee. Before the final review, the committee examines the thesis while also checking that proper consideration has been given to copyright. The committee states the review results in the doctoral thesis review report.

9. Working students

Aside from the method mentioned earlier, students admitted under the exceptional educational method stipulated in Article 14 of the Standards for the Establishment of Graduate Schools (hereinafter called "working students") will be enrolled in the following manner:

(1) Exceptions for working students of master's programs

1) Working students must attend courses full time for at least one year of the standard period for each program (two years in master's programs and three years in doctoral programs).
2) Courses are offered in the evening of working days (17:50–19:20) as an exception, although working students may also take courses offered in the daytime and all other timeslots.
3) During the mandatory full-time study for one year in a master's program, they must make an enrollment plan to acquire the necessary credits from evening classes (17:50–19:20) in order to properly conduct their master's research. In other words, during this period, daytime courses should only be taken when such courses are not offered in the evening.
4) Once admitted, they must seek guidance from their module manager or the like and develop an enrollment and study plan for two years of master's program or three years of doctoral program.
5) If it is impossible to complete the program in the standard period of study due to professional reasons, they should consider making an enrollment and study plan for three to four years of master's program or four to six years of doctoral programs.
6) Working students should declare and gain approval for any change in their enrollment and study plan made as an exception.

(2) Exceptions for working students of doctoral programs

1) Courses are offered in the evening of working days (17:50–19:20) and the weekend (7.5 classes in two days) although working students may also take courses offered in the daytime and all other timeslots.
2) Working students should declare and gain approval for any change in their enrollment and study plan made as an exception.

(3) Exceptions for making the most of available courses

Non-working students may take courses according to the abovementioned exceptions when their module managers acknowledge that there is such a need.

Course List

Notes
- Classification:「e」indicates Engineering course group, 「s」indicates Science course group, 「i」indicates Information course group and 「p」indicates Professional course group.
- Schedule code:(S) indicates Spring semester, (F) indicates Fall semester and (Y) indicates Year-long-course.

VI- 1 Master's program

<T-type Engineering Degree (TED) Program, Professional Science Degree (PSD) Program, and Science Degree Program>

【core courses】

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
p	N000011	Multi-diciplinary Problem Based Learning in Graduate School of Engineering Science	MUKAI KOKI , et.al.	2	Lectures	1･2		Japanese	ESa5002	Every	Spring	
p	(a) N00002A (b) N00002B (c) N00002C (d) N00002D (e) N00002E (f) N00002F (g)N00002G (h)N00002H (i)N00002I (j)N00002J (k)N00002K	Presentation English	ANDO YOSHITAKA, INADA MASATOSHI, KAYABUKI TADASHI	2	Lectures	1･2		English	ESa5006	Every	Spring･Fall	ANDO YOSHITAKA (a)－(d) class:Spring Semester (e)－(f) class:Fall Semester INADA MASATOSHI (g),(h)class:Spring Semester KAYABUKI TADASHI (i),(j)class:Spring Semester (k)class:Fall Semester
p	N000064	Innovation and New Business II	OTSUKA KAZUHIRO , et.al.	2	Lectures	1･2		Japanese	ESa4004	Every	Fall	
p	N000071	Project Management I	OKANOYA MASAHIRO	2	Lectures	1･2		English	ESa4002	Every	Spring	Biweekly offered
p	N000081	Project Management II	OKANOYA MASAHIRO	2	Lectures	1･2		English	ESa4002	Every	Fall	Intensive course
p	N000111	The Professional Ethics in EU＆US	KITAGAWA TATSUO , et.al.	2	Lectures	1･2		English	ESa4002	Every	Spring	
p	N000121	Effective Business Planning in Global Companies	FUJIOKA KENSUKE	2	Lectures	1･2		Japanese	ESa4002	Every	Spring	Biweekly offered
p	N000131	Next Generation's Business Skills as a Global Standard	YAMAGUCHI HIROSHI	2	Lectures	1･2		Japanese	ESa4002	Every	Spring	Biweekly offered
p	N000141	Innovation and Challenges I	OTSUKA KAZUHIRO , et.al.	2	Lectures	1･2		Japanese	ESa4002	Every	1 st Term	
p	N000151	Innovation and Challenges II	OTSUKA KAZUHIRO , et.al.	2	Lectures	1･2		Japanese	ESa4002	Every	2 nd Term	
p	N000161	Standardization and Business	MANABU ETO , et.al.	2	Lectures	1・2		Japanese	ESa4002	Every	Spring	
p	N000171	Technological subject in Kanagawa prefecture	TAMECHIKA EMI	2	Lectures	1・2		Japanese	ESa4002	Every	Spring	
p	(S) N009811 (F) N009814	Oversea Internship for Science Engineering	ICHIGE KOICHI	2	Exercise	1･2		Japanese	ESa9004	Every	Spring･Fall	
i	NA10011	Computational Fluid Engineering	MATSUI JUN	2	Lectures	1		English	ESb4554	Every	Spring	
e	NA10024	Turbulence Phenomena	NISHINO KOICHI	2	Lectures	1･2		English	ESb4554	Every	Fall	
s	NA20014	Introduction to Materials for Electronics and Optoelectronics	MUKAI KOKI	2	Lectures	1･2		English	ESb4444	Every	Fall	
e	NA20024	Introduction of multi-functional composites	NAKAO WATARU	2	Lectures	1･2		English	ESb4594	Every	Fall	
e	NA30014	Ship Motions in Waves	HIRAKAWA YOSHIAKI	2	Lectures	1･2		English	ESb4612	Every	Fall	
e	NA30024	Introduction to Ocean Resources and Energy Engineering	NISHI YOSHIKI	2	Lectures	1･2		English	ESb4612	Every	Fall	
i	NB10014	Advanced Statistical Mechanics	SAKOMURA MASARU	2	Lectures	1･2		English	ESf4521	Odd	Fall	
i	NB10021	Quantum theory for chemical reactions	SATO KOTA	2	Lectures	1･2		English	ESf4521	Even	Spring	
e	NB10031	Catalytic Chemistry	KUBOTA YOSHIHIRO	2	Lectures	1･2		English	ESf4603	Even	Spring	
e	NB10044	Design of Polymers and Polymer Systems	OYAMA TOSHIYUKI	2	Lectures	1･2		English	ESf4533	Even	Fall	
s	NB10064	Microbial Biotechnology	KIKUCHI YOSHIMI	2	Lectures	1･2		Japanese	ESf4712	Odd	Fall	
s	NB10074	Advanced Instrumental Analysis	TANIMURA MAKOTO	2	Lectures	1･2		Japanese	ESf4534	Every	Fall	

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
s	NB10254	Solid State Chemistry	YABUUCHI NAOAKI	2	Lectures	1･2		English	ESh4523	Even	Fall	
i	NB20011	Process Monitoring	OKAZAKI SHINJI	2	Lectures	1･2		English	ESf5565	Every	Spring	
e	NB20024	Advanced Heat Transfer	OKUYAMA KUNITO	2	Lectures	1･2		English	ESf5555	Every	Fall	
e	NB20031	Advanced Transport Phenomena	AIHARA MASAHIKO	2	Lectures	1･2		English	ESf5601	Every	Spring	
e	NB20043	Cutting Edge of Fuel Cell Technology	MITSUSHIMA SHIGENORI , et.al.	2	Lectures	1･2		English	ESf5537	Every	3 rd Term	
s	NC10014	Mathematical Sciences: Algebra	KAJIWARA TAKESHI	2	Lectures	1･2		English	ESj4471	Even	Fall	specified for specialization in Mathematical Sciences
s	NC10021	Mathematical Sciences: Geometry	HONDA ATSUFUMI	2	Lectures	1･2		English	ESj4472	Odd	Spring	specified for specialization in Mathematical Sciences
s	NC10031	Mathematical Sciences: Analysis	SHIOJI NAOKI	2	Lectures	1･2		English	ESj4473	Even	Spring	specified for specialization in Mathematical Sciences
i	NC10044	Mathematical Sciences: Probability and Statistics	KONNO NORIO , et.al.	2	Lectures	1･2		English	ESj4475	Every	Spring/Fall	In charge of Even year：TAKEI MASATO In charge of Odd year ：KONNO NORIO Even year：Fall Semester Odd year：Spring Semester
s	NC10051	Mathematical Sciences: Data Sciences	KUROKI MANABU	2	Lectures	1･2		English	ESj4475	Every	Spring	specified for specialization in Mathematical Sciences
i	NC20011	Quantum Statistical Mechanics	KURAMOTO TETSUJI	2	Lectures	1･2		English	ESj4494	Even	Spring	
s	NC20021	Nanophysics and Advanced Materials	ICHIYANAGI YUKO , et.al.	2	Lectures	1･2		English	ESj4432	Every	Spring	
s	NC20031	Magneto-Science	UEHARA MASATOMO , et.al.	2	Lectures	1･2		English	ESj4493	Every	Spring	
s	NC20044	Low temperature physics	SHIMAZU YOSHIHIRO	2	Lectures	1･2		English	ESj4492	Odd	Fall	
s	NC20051	Astroparticle Physics	NAKAMURA SHOGO	2	Lectures	1･2		English	ESj4491	Odd	Spring	
s	NC20064	Plasma Physics	TSUSHIMA AKIRA	2	Lectures	1･2		English	ESj4511	Even	Fall	
e	NC30014	Energy System	FUJII YASUMASA , et.al.	2	Lectures	1･2		Japanese	ESj4616	Even	Spring	
i	NC30024	Signal Theory	SHOUKI HIROKI	2	Lectures	1･2		Japanese	ESj4564	Every	Fall	
i	NC30034	Advanced Digital Communications	KOHNO RYUJI	2	Lectures	1･2		English	ESj4564	Every	Fall	
e	NC30041	VLSI System Design	YOSHIKAWA NOBUYUKI	2	Lectures	1･2		English	ESj4563	Every	Spring	
e	NC30054	A Course for Advanced Electronics Products and Their Architecture	YOSHIKAWA NOBUYUKI	2	Lectures	1･2		Japanese	ESj4563	Every	Fall	
i	NC30064	Intelligent Systems	HAMAGAMI TOMOKI	2	Lectures	1･2		English	ESj4124	Every	Fall	
e	NC30071	Material Integration	MATSUKI TAKEO	2	Lectures	1･2		Japanese	ESj4562	Every	Spring	

Mechanical Engineering, Materials Science, and Ocean Engineering

【major courses】

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
e	NA10031	Advanced Strength Design	YU QIANG	2	Lectures	1･2		English	ESc5551	Every	Spring	
i	NA10054	System modeling and control	SANADA KAZUSHI	2	Lectures	1		English	ESc5556	Every	Fall	
e	NA10064	Reactive Gas Dynamics	ISHI KAZUHIRO	2	Lectures	1･2		English	ESc5555	Every	Fall	
e	NA10074	Space Propulsion Engineering	YOSHINORI TAKAO	2	Lectures	1		English	ESc5611	Every	Fall	
s	NA20031	Orientation Analysis on Deformation and Fracture in Polycrystalline Material	UMEZAWA OSAMU	2	Lectures	1･2		English	ESc4594	Every	1 st Term	
e	NA20041	Material Forming Process	MAENO TOMOYOSHI	2	Lectures	1･2		English	ESc4552	Every	Spring	
i	NA30034	Exercises in Computational Hydrodynamics	HINO TAKANORI	2	Lectures	1･2		English	ESc5612	Every	Fall	
i	NA30041	Exercises in Computational Structural Analysis	KAWAMURA YASUMI	2	Lectures	1･2		English	ESc5612	Every	Spring	
e	NA30051	Introduction to Engineering Turbulence	YOUHEI TAKAGI	2	Lectures	1･2		English	ESc5612	Every	Spring	
e	NA30061	Aerospace Utilization Engineering	HIGUCHI TAKEHIRO	2	Lectures	1･2		English	ESc5611	Every	Spring	

【specialized courses】

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	○specified specialized courses for each specialization Among them, ◎required courses, ●compulsory elective courses			
												Mechanical Engineering	Science Frontier	Systems Design for Ocean-Space	Aerospace Engineering
e	NA10084	Mechatronics Design	SATO YASUKAZU	2	Lectures	1･2		English	ESd5553	Every	Fall	○			
e	NA10091	Advanced High-speed Machining	SHINOZUKA JUN	2	Lectures	1		English	ESd5552	Every	Spring	○			
e	NA10104	Fracture Mechanics	AKINIWA YOSHIAKI	2	Lectures	1		English	ESd5551	Every	Fall	○			
e	NA10111	Rarefied Gas Dynamics	MATSUMOTO HIROAKI	2	Lectures	1		English	ESd5554	Every	Spring	○			
e	NA10121	Advanced Robotics	SUGIUCHI HAJIME	2	Lectures	1		English	ESd5556	Every	Spring	○			
i	NA10131	Intelligent Robotic Agents	MAEDA YUUSUKE	2	Lectures	1		English	ESd5126	Every	Spring	○			
e	NA10144	Continuum Mechanics	OZAKI SHINGO	2	Lectures	1･2		English	ESd5551	Every	Fall	○			
e	NA10154	Applied fluid dynamics	HYAKUTAKE TORU	2	Lectures	1		English	ESd5554	Every	Fall	○			
e	NA10164	Design and Principle of Various Actuators	FUCHIWAKI OHMI	2	Lectures	1		English	ESd5556	Every	Fall	○			
e	NA10174	Micromachine Engineering	MARUO SHOJI	2	Lectures	1･2		English	ESd5436	Every	Fall	○			
e	NA10184	Combined Heat Transfer	SAKAI SEIGO	2	Lectures	1		English	ESd5555	Every	Fall	○			
e	NA10194	Applied Thermofluid Engineering	ARAKI TAKUTO	2	Lectures	1		English	ESd5554	Every	Fall	○			
e	NA10204	Cyber-Robotics	KATO RYU	2	Lectures	1･2		English	ESd5234	Every	Fall	○			
e	NA10214	Sensor Engineering	HIROKI OTA	2	Lectures	1		English	ESd5443	Every	Fall				
e	NA10221	Compressible Flow	KITAMURA KEIICHI	2	Lectures	1･2		English	ESd5611	Every	Spring	○			○
e	NA10231	Design of Energy Machine Systems	KABATA YASUO , et.al.	2	Lectures	1･2		Japanese	ESd5616	Every	Spring				
e	(S) NA11101 (F) NA11104	Seminar in Mechanical Engineering A	Each Instructor of Mechanical Engineering	2	Seminars	1	○	Japanese	ESd5011	Every	Spring･Fall	○			○ ※2
e	(S) NA11201 (F) NA11204	Seminar in Mechanical Engineering B	Each Instructor of Mechanical Engineering	2	Seminars	1	○	Japanese	ESd5011	Every	Spring･Fall	○			○ ※2
e	(S) NA11301 (F) NA11304	Seminar in Mechanical Engineering C	Each Instructor of Mechanical Engineering	2	Seminars	2 ＊	○	Japanese	ESd5011	Every	Spring･Fall	◎			

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	○specified specialized courses for each specialization Among them, ◎required courses, ●compulsory elective courses			
												Mechanical Engineering	Science Frontier	Systems Design for Ocean-Space	Aerospace Engineering
e	(S)NA11401 (F)NA11404	Seminar in Mechanical Engineering D	Each Instructor of Mechanical Engineering	2	Seminars	2 *	○	Japanese	ESd5011	Every	Spring・Fall	◎			
p	(S)NA19811 (F)NA19814	Internship in Mechanical Engineering L	Each Instructor of Mechanical Engineering	4	Exercise	1・2		Japanese	ESd5014	Every	Spring・Fall	○ ※1			○ ※3
p	(S)NA19821 (F)NA19824	Internship in Mechanical Engineering M	Each Instructor of Mechanical Engineering	2	Exercise	1・2		Japanese	ESd5014	Every	Spring・Fall	○			○
p	(S)NA19831 (F)NA19834	Internship in Mechanical Engineering S	Each Instructor of Mechanical Engineering	1	Exercise	1・2		Japanese	ESd5014	Every	Spring・Fall	○			○
e	NA20051	Diffusional Transformations in Solids	HIROSAWA SHOICHI	2	Lectures	1・2		English	ESd5594	Every	Spring		○		
s	NA20064	Solid State Physics	NAKATSUGAWA HIROSHI	2	Lectures	1・2		English	ESd5441	Every	Fall		○		
p	NA20074	Advanced Materials Engineering	UMEZAWA OSAMU , et.al.	1	Lectures	1・2		Japanese	ESd5591	Every	Fall		○		
e	NA20084	Design and Engineering of High-Temperature Structural Materials	TODA YOSHIAKI	2	Lectures	1・2		English	ESd5594	Every	Fall		○		
s	NA20094	Computational Modeling of Phase Transformation and Microstructure Evolution	SHIMONO MASATO	2	Lectures	1・2		English	ESd5591	Every	Fall		○		
e	NA20111	Advanced Strength and Fracture of Materials	HASEGAWA MAKOTO	2	Lectures	1・2		English	ESd5594	Every	Spring		○		○
e	NA20124	Introduction to nanomaterials engineering	Mitsuru Ohtake	2	Lectures	1・2		English	ESd5434	Every	Fall		○		
e	NA20134	Advanced structural materials: design and application	GOTO SOTA , et.al.	2	Lectures	1・2		Japanese	ESd5595	Every	Fall		○		
e	(S)NA21101 (F)NA21104	Exercise in Materials Engineering A	UMEZAWA OSAMU , et.al.	2	Seminars	1・2	○	Japanese	ESd5021	Every	Spring・Fall		○		○
e	(S)NA21201 (F)NA21204	Exercise in Materials Engineering B	UMEZAWA OSAMU , et.al.	2	Seminars	1・2	○	Japanese	ESd5021	Every	Spring・Fall		○		○ ※2
e	(S)NA21301 (F)NA21304	Exercise in Materials Engineering C	UMEZAWA OSAMU , et.al.	2	Seminars	1・2	○	Japanese	ESd5021	Every	Spring・Fall		◎		
e	(S)NA21401 (F)NA21404	Exercise in Materials Engineering D	UMEZAWA OSAMU , et.al.	2	Seminars	1・2	○	Japanese	ESd5021	Every	Spring・Fall		◎		
p	(S)NA29811 (F)NA29814	Internship in Materials Engineering L	UMEZAWA OSAMU , et.al.	4	Exercise	1・2		Japanese	ESd5024	Every	Spring・Fall		○		○
p	(S)NA29821 (F)NA29824	Internship in Materials Engineering M	UMEZAWA OSAMU , et.al.	2	Exercise	1・2		Japanese	ESd5024	Every	Spring・Fall		○ ※1		○ ※3
p	(S)NA29831 (F)NA29834	Internship in Materials Engineering S	UMEZAWA OSAMU , et.al.	1	Exercise	1・2		Japanese	ESd5024	Every	Spring・Fall		○		○
e	NA30071	Ship and Marine Structural Design Methodologies	OKADA TETSUO	2	Lectures	1・2		English	ESd5612	Every	Spring			○	
e	NA30084	Theory in Dynamics of Floating Bodies Engineering	MURAI MOTOHIKO	2	Lectures	1・2		English	ESd4612	Every	Fall			○	
e	NA30091	Engineering for Ocean Development	KATO SHUNJI , et.al.	2	Lectures	1・2		English	ESd5612	Even	Spring			○	
e	NA30101	Maritime Traffic Safety	0	2	Lectures	1・2		English	ESd5612	Odd	Spring			○	
e	NA30114	Rule Making Procedures through Risk-Based Approaches	YOSHIDA KOICHI , et.al.	2	Lectures	1・2		English	ESd5612	Every	Fall			○	
e	NA30121	Advanced Study of the Ocean Industry	TAKASHINA JYUNSHI	2	Lectures	1・2		English	ESd5612	Every	Spring			○	
e	(S)NA30131 (F)NA30134	Special Lecture on Ocean and Space Engineering A	UENO SEIYA , et.al.	1	Lectures	1・2		English	ESd5612	Every	Spring・Fall			○	
e	(S)NA30141 (F)NA30144	Special Lecture on Ocean and Space Engineering B	UENO SEIYA , et.al.	1	Lectures	1・2		English	ESd5612	Every	Spring・Fall			○	
e	(S)NA30151 (F)NA30154	Special Lecture on Ocean and Space Engineering C	UENO SEIYA , et.al.	1	Lectures	1・2		English	ESd5612	Every	Spring・Fall			○	
e	(S)NA30161 (F)NA30164	Special Lecture on Ocean and Space Engineering D	UENO SEIYA , et.al.	1	Lectures	1・2		English	ESd5612	Every	Spring・Fall			○	
e	NA30171	BJ Collaborative Special lecture on Naval Architecture and Offshore Engineering A	MURAI MOTOHIKO , et.al.	4	Lectures	1・2		English	ESd4612	Every	Spring			○	

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	○specified specialized courses for each specialization Among them, ◎required courses, ●compulsory elective courses			
												Mechanical Engineering	Science Frontier	Systems Design for Ocean-Space	Aerospace Engineering
e	NA30181	BJ Collaborative Special lecture on Naval Architecture and Offshore Engineering B	MURAI MOTOHIKO , et.al.	2	Lectures	1・2		English	ESd4612	Every	Spring			○	
e	NA30194	BJ Collaborative Special lecture on Naval Architecture and Offshore Engineering C	MURAI MOTOHIKO , et.al.	4	Lectures	1・2		English	ESd4612	Every	Fall			○	
e	NA30204	BJ Collaborative Special lecture on Naval Architecture and Offshore Engineering D	MURAI MOTOHIKO , et.al.	2	Lectures	1・2		English	ESd4612	Every	Fall			○	
e	NA30214	Optimal Astrodynamics	UENO SEIYA	2	Lectures	1・2		English	ESd5611	Every	Fall			○	○
e	NA30224	Aircraft Aerodynamic Design	MIYAJI KOJI	2	Lectures	1・2		English	ESd5611	Every	Fall			○	○
e	NA30231	Space Environment Utilization Science	NATSUISAKA MAKOTO	2	Lectures	1・2		English	ESd5611	Every	Spring			○	○
e	NA30241	Advanced theory of space system	ITO YASUYUKI	2	Lectures	1・2		English	ESd5611	Every	Spring			○	○
e	NA30254	Systems Engineering Theory of Ship Design	Taiga Mitsuyuki	2	Lectures	1・2		English	ESd4612	Every	Fall				
e	(S)NA31101 (F)NA31104	Exercise in Ocean and Space Engineering System A	Each Instructor of Systems Design for Ocean-Space , et.al.	2	Seminars	1	○	Japanese	ESd5031	Every	Spring・Fall			○	○ ※2
e	(S)NA31201 (F)NA31204	Exercise in Ocean and Space Engineering System B	Each Instructor of Systems Design for Ocean-Space , et.al.	2	Seminars	1	○	Japanese	ESd5031	Every	Spring・Fall			○	○
e	(S)NA31301 (F)NA31304	Exercise in Systems Design for Ocean-Space C	Each Instructor of Systems Design for Ocean-Space	2	Seminars	2 ＊	○	Japanese	ESd5031	Every	Spring・Fall			◎	
e	(S)NA31401 (F)NA31404	Exercise in Systems Design for Ocean-Space D	Each Instructor of Systems Design for Ocean-Space	2	Seminars	2 ＊	○	Japanese	ESd5031	Every	Spring・Fall			◎	
p	(S)NA31501 (F)NA31504	Industrial Training in Ocean and Space System Engineering	Each Instructor of Systems Design for Ocean-Space , et.al.	2	Seminars	1・2		Japanese	ESd5034	Every	Spring・Fall			○	○
p	(S)NA31601 (F)NA31604	Overseas Training in Marine and Space System Engineering	Each Instructor of Systems Design for Ocean-Space , et.al.	2	Seminars	1・2		English	ESd5034	Every	Spring・Fall			○	○
p	(S)NA31701 (F)NA31704	Practical Engineering Training in Ocean-Space	Each Instructor of Systems Design for Ocean-Space , et.al.	4	Seminars	1・2		Japanese	ESd5034	Every	Spring・Fall			○	
p	(S)NA31801 (F)NA31804	Practical Training in Ocean and Space System Engineering	Each Instructor of Systems Design for Ocean-Space , et.al.	4	Seminars	1・2		Japanese	ESd5034	Every	Spring・Fall			○	○
p	(S)NA39811 (F)NA39814	Inntership in Ocean and Space System Engineering L	Each Instructor of Systems Design for Ocean-Space , et.al.	4	Exercise	1・2		English	ESd5034	Every	Spring・Fall			○	○
p	(S)NA39821 (F)NA39824	Inntership in Ocean and Space System Engineering M	Each Instructor of Systems Design for Ocean-Space , et.al.	2	Exercise	1・2		English	ESd5034	Every	Spring・Fall			○ ※1	○ ※3
p	(S)NA39831 (F)NA39834	Inntership in Ocean and Space System Engineering S	Each Instructor of Systems Design for Ocean-Space , et.al.	1	Exercise	1・2		English	ESd5034	Every	Spring・Fall			○	○
e	(S)NA41101 (F)NA41104	Exercise in Aerospace Engineering C	Each Instructor of Aerospace Engineering	2	Seminars	2 ＊	○	English	ESd5041	Every	Spring・Fall			○	◎
e	(S)NA41201 (F)NA41204	Exercise in Aerospace Engineering D	Each Instructor of Aerospace Engineering	2	Seminars	2 ＊	○	English	ESd5041	Every	Spring・Fall			○	◎

※1 : Only one of these courses can be taken. Consult with your academic advisor or the academic affairs officer regarding your intended enrollment.

※2 : Research guidance course.

Students specializing in aerospace engineering can take only one of the combinations of [Seminar in Mechanical Engineering A / Seminar in Mechanical Engineering B], [Exercise in Materials Engineering A / Exercise in Materials Engineering B], and [Exercise in Ocean and Space Engineering System A and Exercise in Ocean and Space Engineering System B].

※3 : Consult with your academic advisor or the academic affairs officer regarding your intended enrollment.Only one of the nine courses can be taken.

Courses marked with an asterisk (*) next to the Grade: Students who wish to complete their studies early may register for these courses irrespective of their year of registration after consulting their supervisors and members of the Academic Affairs and Library Committee.

Chemistry and Life Science

【major courses】

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
s	NB10081	Photophysics and Photochemistry	KIKUCHI AZUSA	2	Lectures	1･2		English	ESg5521	Even	Spring	
s	NB10091	Biophysical Chemistry	KAWAMURA IZURU	2	Lectures	1･2		English	ESg5674	Even	Spring	
s	NB10104	Metal Coordination Chemistry	YOSHITAKA YAMAGUCHI	2	Lectures	1･2		English	ESg5523	Odd	Fall	
s	NB10111	Advanced Study on Career Design (PSD)	HANZAWA HIROYUKI , et.al.	2	Lectures	1･2		Japanese	ESg5544	Every	Spring	
e	NB10124	Chemistry of Electron Transfer Reactions	DOKKO KAORU , et.al.	2	Lectures	1･2		English	ESg5537	Every	Fall	
e	NB10134	Applied Electrochemistry	DOKKO KAORU	2	Lectures	1･2		English	ESg5544	Odd	Fall	
e	NB10141	Catalytic reaction engineering	INAGAKI SATOSHI	2	Lectures	1･2		English	ESg5603	Odd	Spring	
e	NB20051	Basic Energy Chemistry	MITSUSHIMA SHIGENORI , et.al.	2	Lectures	1･2		English	ESg5537	Every	Spring	
e	NB20064	Materials Science for Energy Conversion	MATSUZAWA KOICHI	2	Lectures	1･2		English	ESg5531	Every	Fall	
s	NB20071	Functional Genome Science	KURIHARA YASUYUKI	2	Lectures	1･2		English	ESg5671	Every	Fall	
e	NB20084	Materials for Strength Components	TAKAHASHI KOJI	2	Lectures	1･2		English	ESg5551	Odd	Fall	
e	NB20104	Environmental Separation Engineering	NAKAMURA KAZUHO , et.al.	2	Lectures	1･2		English	ESg5601	Every	Fall	
e	NB20114	Introduction to Energy Value Chain System	MUGIKURA YOSHIHIRO	2	Lectures	1･2		Japanese	ESg5537	Every	Fall	
e	NB20124	Fuel Cell Technology	MORITA HIROSHI	2	Lectures	1･2		Japanese	ESg5602	Every	Fall	
e	NB20131	Ceramics and Energy Technologies	YAMAMOTO TOHRU	2	Lectures	1･2		Japanese	ESg5537	Every	Spring	
e	NB20141	Developmental Engineering	SUZUKI ATSUSHI	2	Lectures	1･2		English	ESg5676	Every	Spring	

【specialized courses】

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	○specified specialized courses for each specialization Among them, ◎required courses, ●compulsory elective courses			
												Chemistry	Applied Chemistry	Chemistry Applications and Life Science	Energy and Sustainable Chemistry
e	NB10151	Advanced Course on Organic Electrochemistry	ATOBE MAHITO	2	Lectures	1･2		English	ESh5532	Odd	Spring	○	○	○	○
e	NB10161	Chemistry of Inter-element Linkage	MINATO MAKOTO	2	Lectures	1･2		English	ESh5522	Even	Spring	○	○		○
e	NB10171	Chemistry of Photoreactive Materials	UBUKATA TAKASHI	2	Lectures	1･2		English	ESh5531	Odd	Spring	○	○		○
e	NB10184	Ceramic Materials Engineering	TATAMI JUNICHI	1	Lectures	1･2		English	ESh5592	Every	4 th Term	○	○		○
e	NB10194	Powder Processing and Materials Engineering	IIJIMA MOTOYUKI	1	Lectures	1･2		English	ESh5601	Every	4 th Term	○	○		○
s	NB10201	Advanced Physical Organic Chemistry	GOTO HIROAKI	2	Lectures	1･2		English	ESh5522	Odd	Spring	○	○		○
s	NB10214	Structural Biology	CHOJIRO KOJIMA	2	Lectures	1･2		English	ESh5672	Odd	Spring	○	○		○
s	NB10221	Chemical Astrobiology	KEBUKAWA YOKO	2	Lectures	1･2		English	ESh5507	Even	Spring	○	○		○
s	NB10231	Chemical Reaction Dynamics	SEKI KANEKAZU	2	Lectures	1･2		English	ESh5521	Odd	Spring	○	○		○
s	NB10241	Fine Synthetic Organic Chemistry	ITO SUGURU	2	Lectures	1･2		English	ESh5502	Odd	Spring	○	○		○
e・s	NB11101	Exercise in Chemistry S	Each Instructor of Chemistry	2	Seminars	1		Japanese	ESh5012	Every	Spring	◎	◎		● ※2①
e・s	NB11204	Exercise in Chemistry F	Each Instructor of Chemistry	2	Seminars	1		Japanese	ESh5012	Every	Fall	◎	◎		●
s	NB11301	Exercise in Chemistry S (PSD)	Each Instructor of Chemistry	2	Seminars	2 ＊	○	Japanese	ESh5011	Every	Spring	◎			
s	NB11404	Exercise in Chemistry F (PSD)	Each Instructor of Chemistry	2	Seminars	2 ＊	○	Japanese	ESh5011	Every	Fall	◎			

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	○specified specialized courses for each specialization Among them, ◎required courses, ●compulsory elective courses			
												Chemistry	Applied Chemistry	Chemistry Applications and Life	Energy and Sustainable Chemistry
s	NB11504	Advanced Laboratory in Chemistry (PSD)	Each Instructor of Chemistry	2	Exercise	1･2		Japanese	ESh5015	Every	Fall	○			
s	NB11601	Off-Campus Exercise in Chemistry (PSD)	Each Instructor of Chemistry	2	Exercise	1･2		Japanese	ESh5015	Every	Spring	○			
p	NB11701	Exercise for Effective Presentation in Chemistry (PSD)	Each Instructor of Chemistry	1	Exercise	2 ＊		Japanese	ESh5015	Every	Spring	◎			
e	NB11801	Exercise in Chemistry S (TED)	Each Instructor of Applied Chemistry	2	Seminars	2 ＊	○	Japanese	ESh5021	Every	Spring		◎		
e	NB11904	Exercise in Chemistry F (TED)	Each Instructor of Applied Chemistry	2	Seminars	2 ＊	○	Japanese	ESh5021	Every	Fall		◎		
e	NB12004	Advanced Laboratory in Chemistry (TED)	Each Instructor of Chemistry	2	Exercise	1･2		Japanese	ESh5025	Every	Fall		○		○
e	NB12101	Off-Campus Exercise in Chemistry (TED)	Each Instructor of Chemistry	2	Exercise	1･2		Japanese	ESh5024	Every	Spring		○		○
p	NB12201	Exercise for Effective Presentation in Chemistry (TED)	Each Instructor of Chemistry	1	Exercise	2 ＊		Japanese	ESh5025	Every	Spring		◎		● ※2
e	NB12301	Exercise in Energy and Sustainable Chemistry BS	ATOBE MAHITO , et.al.	2	Seminars	2 ＊	○	Japanese	ESh5031	Every	Spring				● ※2①
e	NB12404	Exercise in Energy and Sustainable Chemistry BF	ATOBE MAHITO , et.al.	2	Seminars	2 ＊	○	Japanese	ESh5031	Every	Fall				●
p	(S)NB19811 (F)NB19814	Internship in Chemistry L	Each Instructor of Chemistry	4	Exercise	1･2		Japanese	ESh5024	Every	Spring･Fall	○	○		○
p	(S)NB19821 (F)NB19824	Internship in Chemistry M	Each Instructor of Chemistry	2	Exercise	1･2		Japanese	ESh5024	Every	Spring･Fall	○ ※1	○ ※1		○ ※1
p	(S)NB19831 (F)NB19834	Internship in Chemistry S	Each Instructor of Chemistry	1	Exercise	1･2		Japanese	ESh5024	Every	Spring･Fall	○	○		○
p	(S)NB19841 (F)NB19844	Oversea Internship in Chemistry L	Each Instructor of Chemistry	4	Exercise	1･2		English	ESh5024	Every	Spring･Fall	○	○		○
p	(S)NB19851 (F)NB19854	Oversea Internship in Chemistry M	Each Instructor of Chemistry	2	Exercise	1･2		English	ESh5024	Every	Spring･Fall	○ ※1	○ ※1		○ ※1
p	(S)NB19861 (F)NB19864	Oversea Internship in Chemistry S	Each Instructor of Chemistry	1	Exercise	1･2		English	ESh5024	Every	Spring･Fall	○	○		○
e	NB20151	Risk Analysis	SUYAMA KOICHI , et.al.	2	Lectures	1･2		Japanese	ESh5221	Every	Spring			○	○
e	NB20164	Recurrent Education for Engineering	OKAZAKI SHINJI	2	Lectures	1･2		English	ESh5181	Odd	Fall			○	○
e	NB20284	Mixing for Chemical Engineering	MISUMI RYUTA	2	Lectures	1･2		English	ESh5601	Every	Fall			○	○
e	NB20181	Material Production Technology	HABUKA HITOSHI	2	Lectures	1･2		English	ESh5602	Every	Spring			○	○
e	NB20191	Microbial Biotechnology	TAKEDA MINORU	2	Lectures	1･2		English	ESh5712	Every	Fall			○	○
e	NB20204	Medical Engineering	FUKUDA JUNJI , et.al.	2	Lectures	1･2		English	ESh5231	Odd	Fall			○	○
p	NB20214	Technology-Development & Society	NAKAMURA KAZUHO , et.al.	2	Lectures	1･2		Japanese	ESh5602	Every	Spring			○	○
e	NB20221	Physical Chemistry for Environmental Sciences	YOSHITAKE HIDEAKI	2	Lectures	1･2		English	ESh5536	Every	Spring			○	○
p	NB20231	Problem-Based Learning in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	2	Lectures	1･2		Japanese	ESh5049	Every	Spring			○	○
i	NB20241	Simulation for Chemical Processes	YAMAMOTO HIROSHI	2	Lectures	1･2		Japanese	ESh5602	Every	Spring			○	○
e	NB20254	Functional Materials Science	KANAI TOSHIMITSU	2	Lectures	1･2		English	ESh5593	Even	Fall			○	○
e	NB20261	Tissue Engineering and Regenerative Medicine	FUKUDA JUNJI	2	Lectures	1･2		English	ESh5604	Odd	Spring			○	○
e	NB20271	Materials Engineering for Machinery and Apparatus	TAKAHASHI KOJI	2	Lectures	1･2		English	ESh5551	Odd	Spring			○	○
e	NB21101	Seminar A in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	2	Seminars	1		Japanese	ESh5042	Every	Spring			◎	● ※2②
e	NB21204	Seminar B in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	2	Seminars	1		Japanese	ESh5042	Every	Fall			◎	●
e	NB21301	Seminar C in Chemistry Applications and Life Science	OKUYAMA KUNITO , et.al.	2	Seminars	2 ＊	○	Japanese	ESh5042	Every	Spring			◎	

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	○specified specialized courses for each specialization Among them, ◎required courses, ●compulsory elective courses			
												Chemistry	Applied Chemistry	Chemistry Applications and Life	Energy and Sustainable Chemistry
e	NB21404	Seminar D in Chemistry Applications and Life Science	OKUYAMA KUNITO , et.al.	2	Seminars	2 ＊	○	Japanese	ESh5042	Every	Fall			◎	
e	NB21504	Advanced Laboratory in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	2	Exercise	1･2		Japanese	ESh5045	Every	Fall			○	○
e	NB21601	Off-Campus Exercise in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	2	Exercise	1･2		Japanese	ESh5045	Every	Spring			○	○
e	NB21701	Seminar AS in Energy Chemistry	OKAZAKI SHINJI , et.al.	2	Seminars	2 ＊	○	Japanese	ESh5032	Every	Spring			○	● ※2 ②
e	NB21804	Seminar AF in Energy Chemistry	OKAZAKI SHINJI , et.al.	2	Seminars	2 ＊	○	Japanese	ESh5032	Every	Fall			○	●
p	(S) NB29811 (F) NB29814	Internship L in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	4	Exercise	1･2		Japanese	ESh5044	Every	Spring･Fall			○ ※1	○ ※1
p	(S) NB29821 (F) NB29824	Internship M in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	2	Exercise	1･2		Japanese	ESh5044	Every	Spring･Fall			○	○
p	(S) NB29831 (F) NB29834	Internship S in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	1	Exercise	1･2		Japanese	ESh5044	Every	Spring･Fall			○	○

※1 : Only one of these courses can be taken. Consult with your academic advisor or the academic affairs officer regarding your intended enrollment.

※2 : Students must acquire ①【Exercise in Chemistry S / F , Exercise in Energy and Sustainable Chemistry BS / BF】 or

②【Seminar A in Chemistry Applications and Life Science, Seminar B in Chemistry Applications and Life Science, Seminar AS in Energy Chemistry, Seminar AF in Energy Chemistry】.

The students who takes【Exercise in Energy and Sustainable Chemistry BS】and【Exercise in Energy and Sustainable Chemistry BS】must acquire【Exercise for Effective Presentation in Chemistry (TED) 】.

It is not possible to take both of ① and ②.

Courses marked with an asterisk (*) next to the Grade: Students who wish to complete their studies early may register for these courses irrespective of their year of registration after consulting their supervisors and members of the Academic Affairs and Library Committee.

Mathematics, Physics, Electrical Engineering and Computer Science

【major courses】

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
s	NC10064	Advanced Mathematical Sciences: Algebra	KAJIWARA TAKESHI	2	Lectures	1･2		English	ESk5471	Odd	Fall	specified for specialization in Mathematical Sciences
s	NC10071	Advanced Mathematical Sciences: Geometry	HONDA ATSUFUMI	2	Lectures	1･2		English	ESk5472	Even	Spring	specified for specialization in Mathematical Sciences
s	NC10081	Advanced Mathematical Sciences: Analysis	SHIOJI NAOKI	2	Lectures	1･2		English	ESk5473	Odd	Spring	specified for specialization in Mathematical Sciences
s	NC10091	Advanced Mathmatical Sciences: Probability A	KONNO NORIO	2	Lectures	1･2		English	ESk5475	Even	Spring	specified for specialization in Mathematical Sciences
s	NC10104	Advanced Mathematical Sciences: Probability B	TAKEI MASATO	2	Lectures	1･2		English	ESk5475	Odd	Fall	specified for specialization in Mathematical Sciences
s	NC10114	Advanced Mathematical Sciences: Statistics	KUROKI MANABU	2	Lectures	1･2		English	ESk5475	Even	Fall	
i	NC20071	Quantum Information Physics	KOSAKA HIDEO , et.al.	2	Lectures	1･2		English	ESk4432	Every	Spring	
s	NC20084	Introduction to Advanced Laser Spectroscopy	TAKEDA JUN , et.al.	2	Lectures	1･2		English	ESk4492	Every	Fall	
s	NC20091	Introduction to Precision Laser Spectroscopy	KOH HOURAI	2	Lectures	1･2		English	ESk4495	Odd	Spring	
s	NC20101	Many Electron Theory	OONO KAORU , et.al.	2	Lectures	1･2		English	ESk4493	Every	Spring	
s	NC20114	Introduction to Neutrino Physics	MINAMINO AKIHIRO	2	Lectures	1･2		English	ESk4491	Odd	Fall	
s	NC20214	Introduction to condensed matter physics	NASU JOJI	2	Lectures	1・2		English	ESl4493	Odd	Fall	
s	(S) NC21101 (F) NC21104	Seminar for Physical Education	OONO KAORU , et.al.	2	Seminars	1･2		Japanese	ESk9023	Every	Spring･Fall	The course is intended for students who want to acquire a teaching license in science. The course is not required to complete the program.
s	(S) NC21201 (F) NC21204	Practice for Physical Education	OONO KAORU , et.al.	2	Seminars	1･2		Japanese	ESk9022	Every	Spring･Fall	
e	NC30084	Coding Theory	OCHIAI HIDEKI	2	Lectures	1･2		English	ESk4564	Every	Fall	
e	NC30091	Digital Circuit Theory	ICHIGE KOICHI	2	Lectures	1･2		English	ESk4565	Every	Spring	
e	NC30101	Nano photonics	NISHIJIMA YOSHIAKI	2	Lectures	1･2		English	ESk4432	Every	Spring	
e	NC30114	Advanced Discrete Systems	FUJIMOTO YASUTAKA	2	Lectures	1･2		English	ESk4566	Every	Fall	
e	NC30164	Semiconductor Optoelectronics	ARAKAWA TARO	2	Lectures	1･2		English	ESk5444	Odd	Fall	
e	NC30121	Advanced Electronic Devices	BABA TOSHIHIKO	2	Lectures	1･2		English	ESk5563	Even	Fall	

【specialized courses】 Mathematical Sciences

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	○specified specialized courses for each specialization Among them, ◎required courses, ●compulsory elective	Remarks
s	NC11101	Seminar in Mathematical Sciences A	KAJIWARA TAKESHI , et.al.	2	Seminars	1		Japanese	ESl5013	Every	Spring	○	
s	NC11204	Seminar in Mathematical Sciences B	KAJIWARA TAKESHI , et.al.	2	Seminars	1		Japanese	ESl5013	Every	Fall	○	
s	NC11301	Seminar in Mathematical Sciences C	KAJIWARA TAKESHI , et.al.	2	Seminars	2		Japanese	ESl5013	Every	Spring	○	
s	NC11404	Seminar in Mathematical Sciences D	KAJIWARA TAKESHI , et.al.	2	Seminars	2		Japanese	ESl5013	Every	Fall	○	
s	NC11501	Exercises in Mathematical Sciences A	KAJIWARA TAKESHI , et.al.	2	Seminars	1	○	Japanese	ESl5011	Every	Spring	●	Required at least 4 credits.
s	NC11604	Exercises in Mathematical Sciences B	KAJIWARA TAKESHI , et.al.	2	Seminars	1	○	Japanese	ESl5011	Every	Fall	●	
s	NC11701	Exercises in Mathematical Sciences C	KAJIWARA TAKESHI , et.al.	2	Seminars	2	○	Japanese	ESl5011	Every	Spring	●	
s	NC11804	Exercises in Mathematical Sciences D	KAJIWARA TAKESHI , et.al.	2	Seminars	2	○	Japanese	ESl5011	Every	Fall	●	
s	(S) NC11901 (F) NC11904	Training in Mathematical Sciences	KAJIWARA TAKESHI , et.al.	2	Exercise	1･2		Japanese	ESl5014	Every	Spring･Fall	○	
s	NC12001	Exercises on Algebra	KAJIWARA TAKESHI	2	Seminars	1･2		Japanese	ESl4012	Even	Spring		The course is intended for students who want to acquire a teaching license in mathematics. The course is not required to complete the program.
s	NC12104	Exercises on Geometry	HONDA ATSUFUMI	2	Seminars	1･2		Japanese	ESl4012	Even	Fall		
s	NC12204	Exercises on Analysis	SHIOJI NAOKI	2	Seminars	1･2		Japanese	ESl4012	Even	Fall		
s	NC12301	Exercises on Probability Theory	TAKEI MASATO	2	Seminars	1･2		Japanese	ESl4012	Odd	Spring		
s	NC12404	Exercises on Statistics	KONNO NORIO	2	Seminars	1･2		Japanese	ESl4012	Odd	Fall		
s	NC12501	Exercises on Computational Mathematics	KAJIWARA TAKESHI	2	Seminars	1･2		Japanese	ESl4012	Odd	Spring		

【specialized courses】 Physics

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	○Specified specialized courses for each specialization Among them, ◎required courses, ●compulsory elective	Remarks
s	NC20124	Heavy Fermion Physics	UMEHARA IZURU	2	Lectures	1･2		English	ESl5493	Even	Fall	○	
s	NC20134	Surface Science	SHUDO KENICHI , et.al.	2	Lectures	1･2		English	ESl5443	Every	Fall	○	
s	NC20144	Symmetry and Group Theory in Crystals	SEKIYA TAKAO	2	Lectures	1･2		English	ESl5442	Odd	Fall	○	
s	NC20151	High Energy Physics	KATAYOSE YUSAKU	2	Lectures	1･2		English	ESl5446	Even	Spring	○	
s	NC20161	Nonlinear Science	ISHIWATA SHINGO	2	Lectures	1･2		English	ESl5494	Even	Spring	○	
s	NC20173	Current Topics in Advanced Physics	OHISHI KAZUKI	2	Lectures	1･2		Japanese	ESl5493	Every	Fall	○	
s	NC20183	Current Topics in Modern Physics	HAYAMI SATORU	2	Lectures	1･2		Japanese	ESl5494	Every	Fall	○	
p	(Y) NC20194	Career-Design in Physics	UMEHARA IZURU , et.al.	2	Lectures	1		Japanese	ESl5022	Every	Year-long	○	
s	NC20201	Current Topics in Physics Frontier	HASEGAWA MASAYA	2	Lectures	1・2		Japanese	ESl5491	Every	Spring	○	
s	NC21301	Exercise in Physics, A	Each Instructor of Physics	2	Seminars	1	○	Japanese	ESl5021	Every	Spring	●	Required at least 4 credits.
s	NC21404	Exercise in Physics, B	Each Instructor of Physics	2	Seminars	1	○	Japanese	ESl5021	Every	Fall	●	
s	NC21501	Exercise in Physics, C	Each Instructor of Physics	2	Seminars	2	○	Japanese	ESl5021	Every	Spring	●	
s	NC21604	Exercise in Physics, D	Each Instructor of Physics	2	Seminars	2	○	Japanese	ESl5021	Every	Fall	●	
s	NC21701	PSD Seminar in Physics, A	Each Instructor of Physics	2	Seminars	1･2		Japanese	ESl5022	Every	Spring	○	
s	NC21804	PSD Seminar in Physics, B	Each Instructor of Physics	2	Seminars	1･2		Japanese	ESl5022	Every	Fall	○	
p	(Y) NC21904	Presentation Practice in Physics	Each Instructor of Physics	1	Exercise	1		English	ESl5025	Every	Year-long	◎	
p	(S) NC29811 (F) NC29814	Internships in Physics, L	Each Instructor of Physics	4	Exercise	1･2		Japanese	ESl5024	Every	Spring･Fall	○	Only one of these courses can be taken. Consult with your academic advisor or the academic affairs officer regarding your intended enrollment.
p	(S) NC29821 (F) NC29824	Internships in Physics, M	Each Instructor of Physics	2	Exercise	1･2		Japanese	ESl5024	Every	Spring･Fall	○	
p	(S) NC29831 (F) NC29834	Internships in Physics, S	Each Instructor of Physics	1	Exercise	1･2		Japanese	ESl5024	Every	Spring･Fall	○	

【specialized courses】 Applied Physics/Information Systems Engineering/Electrical and Computer Engineering

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	○specified specialized courses for each specialization Among them, ◎required courses, ●			Remarks
												Applied Physics	Information Systems	Electrical and Computer Engineering	
s	NC30121	Photonics Theory	BABA TOSHIHIKO	2	Lectures	1･2		English	ESl4444	Every	Spring	○	○	○	
e	NC30131	Power System Planning	OYAMA TSUTOMU	2	Lectures	1･2		English	ESl5561	Every	Spring	○	○	○	
e	NC30141	Advanced Semiconductor Physics	HANEJI NOBUO , et.al.	2	Lectures	1･2		English	ESl5563	Odd	Fall	○	○	○	
i	NC30171	Information & Communications Infrastructure	SOICHI WATANABE	2	Lectures	1･2		Japanese	ESl5564	Every	Spring	○	○	○	
i	NC30184	Multimedia Mobile Communication Networks	HIROYUKI TSUJI	2	Lectures	1･2		English	ESl5564	Every	Fall	○	○	○	
e	NC30191	Microwave Engineering	KUGA NOBUHIRO	2	Lectures	1･2		English	ESl5564	Every	Spring	○	○	○	
i	NC30204	Fault Tolerant Systems	TANAKA HIROKAZU	2	Lectures	1･2		Japanese	ESl5564	Every	Fall	○	○	○	
s	NC30211	Advanced Electromagnetism	KUMADA AKIKO	2	Lectures	1･2		Japanese	ESl5561	Even	Spring	○	○	○	
e	NC30234	CMOS Analog Circuit Design	OGAWA ATSUSHI	2	Lectures	1･2		Japanese	ESl5563	Every	Fall	○	○	○	
e	NC30241	Integrated Nanodevices	OYA TAKAHIDE	2	Lectures	1･2		English	ESl5436	Every	Spring	○	○	○	
i	NC30261	Colloquium in Medical Engineering and Informatics Based on Information Communication Technology	SHIMONO TOMOYUKI , et.al.	2	Lectures	1･2		English	ESl5131	Every	Spring	○	○	○	
e	NC30271	A Basis of Smartgrid Technology	TSUJI TAKAO	2	Lectures	1･2		English	ESl5561	Every	Spring	○	○	○	
s	NC30281	Superconducting Electronics	YAMANASHI YUKI	2	Lectures	1･2		English	ESl5563	Every	Spring	○	○	○	
e	NC30294	Measurement of Mobile Antenna Systems	ARAI HIROYUKI	2	Lectures	1･2		English	ESl5564	Odd	Fall	○	○	○	
e	NC30301	Motion Control Systems	SHIMONO TOMOYUKI	2	Lectures	1･2		English	ESl5561	Every	Spring	○	○	○	
i	NC30314	Human Factors and Ergonomics	SHIMA KEISUKE	2	Lectures	1･2		English	ESl5234	Every	Fall	○	○	○	
e	NC30324	Colloquium in Applied Physics I	TSUJI TAKAO , et.al.	2	Lectures	1		English	ESl5563	Every	Fall	◎			
e	NC30334	Colloquium in Applied Physics II	TSUJI TAKAO , et.al.	2	Lectures	2		English	ESl5563	Every	Fall	○			
i	NC30344	Colloquium in Information Systems I	TSUJI TAKAO , et.al.	2	Lectures	1		English	ESl5111	Every	Fall		◎		
i	NC30354	Colloquium in Information Systems II	TSUJI TAKAO , et.al.	2	Lectures	2		English	ESl5111	Every	Fall		○		
e	NC30364	Colloquium in Electrical and Computer Engineering I	TSUJI TAKAO , et.al.	2	Lectures	1		English	ESl5564	Every	Fall			◎	
e	NC30374	Colloquium in Electrical and Computer Engineering II	TSUJI TAKAO , et.al.	2	Lectures	2		English	ESl5564	Every	Fall			○	
e	NC30381	Multimedia Wireless Communication Networks	RI KANHOU	2	Lectures	1・2		English	ESl5564	Every	Spring				
e	NC30391	Spintronics	SEKIGUCHI KOJI	2	Lectures	1・2		English	ESl5441	Every	Spring	○	○	○	
i	NC30404	Human Sensing Engineering	SUGIMOTO CHIKA	2	Lectures	1・2		English	ESl5122	Every	Fall	○	○	○	
e	NC30411	Electriccal-Mechanical Energy Conversion	AKATSU KAN	2	Lectures	1･2		English	ESl4561	Every	Spring			○	
i	NC30421	Metaheuristics	NAKATA MASAYA	2	Lectures	1･2		English	ES l 4125	Every	Spring				
p	NC31101	Off-Campus Exercise in Applied Physics	Each Instructor of Applied Physics , et.al.	2	Exercise	1･2		Japanese	ESl5034	Every	Spring	○			
p	NC31201	Off-Campus Exercise in Information Systems	Each Instructor fo Information Systems , et.al.	2	Exercise	1･2		Japanese	ESl5044	Every	Spring		○		
p	NC31301	Off-Campus Exercise in Electrical and Computer Engineering	Each Instructor of Electrical and Computer Engineering , et.al.	2	Exercise	1･2		Japanese	ESl5054	Every	Spring			○	

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	○:specified specialized courses for each specialization Among them, ●:required courses. Applied Physics	Information Systems	Electrical and Computer Engineering	Remarks
e	NC31401	Seminar in Applied Physics A	Each Instructor of Applied Physics	2	Seminars	1	○	Japanese	ESl5032	Every	Spring	●			
e	NC31504	Seminar in Applied Physics B	Each Instructor of Applied Physics	2	Seminars	1	○	Japanese	ESl5032	Every	Fall	●			
e	NC31601	Seminar in Applied Physics C	Each Instructor of Applied Physics	2	Seminars	2	○	Japanese	ESl5032	Every	Spring	●			
e	NC31704	Seminar in Applied Physics D	Each Instructor of Applied Physics	2	Seminars	2	○	Japanese	ESl5032	Every	Fall	●			
i	NC31801	Seminar in Information Systems A	Each Instructor fo Information Systems	2	Seminars	1	○	Japanese	ESl5042	Every	Spring		●		
i	NC31904	Seminar in Information Systems B	Each Instructor fo Information Systems	2	Seminars	1	○	Japanese	ESl5042	Every	Fall		●		
i	NC32001	Seminar in Information Systems C	Each Instructor fo Information Systems	2	Seminars	2	○	Japanese	ESl5042	Every	Spring		●		
i	NC32104	Seminar in Information Systems D	Each Instructor fo Information Systems	2	Seminars	2	○	Japanese	ESl5042	Every	Fall		●		
e	NC32201	Seminar in Electrical and Computer Engineering A	Each Instructor of Electrical and Computer Engineering	2	Seminars	1	○	Japanese	ESl5052	Every	Spring			●	
e	NC32304	Seminar in Electrical and Computer Engineering B	Each Instructor of Electrical and Computer Engineering	2	Seminars	1	○	Japanese	ESl5052	Every	Fall			●	
e	NC32401	Seminar in Electrical and Computer Engineering C	Each Instructor of Electrical and Computer Engineering	2	Seminars	2	○	Japanese	ESl5052	Every	Spring			●	
e	NC32504	Seminar in Electrical and Computer Engineering D	Each Instructor of Electrical and Computer Engineering	2	Seminars	2	○	Japanese	ESl5052	Every	Fall			●	
p	(S)NC39811 (F)NC39814	Overseas Internships in Applied Physics L	Each Instructor of Applied Physics , et.al.	4	Exercise	1･2		English	ESl5034	Every	Spring･Fall	○			
p	(S)NC39821 (F)NC39824	Overseas Internships in Applied Physics M	Each Instructor of Applied Physics , et.al.	2	Exercise	1･2		English	ESl5034	Every	Spring･Fall	○			
p	(S)NC39831 (F)NC39834	Overseas Internships in Applied Physics S	Each Instructor of Applied Physics , et.al.	1	Exercise	1･2		English	ESl5034	Every	Spring･Fall	○			
p	(S)NC39841 (F)NC39844	Overseas Internships in Information Systems L	Each Instructor fo Information Systems , et.al.	4	Exercise	1･2		English	ESl5044	Every	Spring･Fall		○		
p	(S)NC39851 (F)NC39854	Overseas Internships in Information Systems M	Each Instructor fo Information Systems , et.al.	2	Exercise	1･2		English	ESl5044	Every	Spring･Fall		○		
p	(S)NC39861 (F)NC39864	Overseas Internships in Information Systems S	Each Instructor fo Information Systems , et.al.	1	Exercise	1･2		English	ESl5044	Every	Spring･Fall		○		
p	(S)NC39871 (F)NC39874	Overseas Internships in Electrical and Computer Engineering L	Each Instructor of Electrical and Computer Engineering , et.al.	4	Exercise	1･2		English	ESl5054	Every	Spring･Fall			○	
p	(S)NC39881 (F)NC39884	Overseas Internships in Electrical and Computer Engineering M	Each Instructor of Electrical and Computer Engineering , et.al.	2	Exercise	1･2		English	ESl5054	Every	Spring･Fall			○	
p	(S)NC39891 (F)NC39894	Overseas Internships in Electrical and Computer Engineering S	Each Instructor of Electrical and Computer Engineering , et.al.	1	Exercise	1･2		English	ESl5054	Every	Spring･Fall			○	

※1: Required at least 4 credits.

※2:Only one of these courses can be taken. Consult with your academic advisor or the academic affairs officer regarding your intended enrollment.

Notes
- Classification: 「e」indicates Engineering course group, 「s」indicates Science course group, 「i」indicates Information course group and 「p」indicates Professional course group.
- Schedule code: (S) indicates Spring semester, (F) indicates Fall semester and (Y) indicates Year-long-course.

VI-2 Doctoral programs

<T-type Engineering Degree (TED) Program, Professional Science Degree (PSD) Program, and Science Degree Program>

Mechanical Engineering, Materials Science, and Ocean Engineering

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
QA10014	Advanced Mechatronics Design	SATO YASUKAZU	2	Lectures	1･2		English	ESd6553	Even	Fall	
QA10021	Advanced Ultra High-speed Machining	SHINOZUKA JUN	2	Lectures	1		English	ESd6552	Odd	Spring	
QA10034	Advanced Lectures on Fracture Mechanics	AKINIWA YOSHIAKI	2	Lectures	1		English	ESd6551	Even	Fall	
QA10041	Advanced Turbo Machinery	MATSUI JUN	2	Lectures	1･2･3		Japanese	ESd6554	Odd	Spring	
QA10051	Advanced Rarefied Gas Dynamics	MATSUMOTO HIROAKI	2	Lectures	1･2		English	ESd6554	Even	Spring	
QA10061	Robotic Manipulation	MAEDA YUUSUKE	2	Lectures	1		English	ESd6557	Even	Spring	
QA10074	Space Propulsion Engineering, Advanced	YOSHINORI TAKAO	2	Lectures	1･2		English	ESd6611	Odd	Fall	
QA10081	Advanced Lectures on Elastoplasticity Theory	OZAKI SHINGO	2	Lectures	1･2		English	ESd6551	Odd	Spring	
QA10094	Advanced Computational Fluid Dynamics	KITAMURA KEIICHI	2	Lectures	1･2		English	ESd6611	Odd	Fall	
QA10101	Non-linear Structural Simulation	YU QIANG	2	Lectures	1･2		English	ESd6551	Odd	Spring	
QA10114	In-depth lecture on micro manipulation	FUCHIWAKI OHMI	2	Lectures	2		English	ESd6436	Odd	Fall	
QA10124	Special issues on mechanical system control	SANADA KAZUSHI	2	Lectures	1		English	ESd6556	Odd	Fall	
QA10134	Thermo-Fluid Dynamics of Combustion	ISHI KAZUHIRO	2	Lectures	1･2･3		English	ESd6555	Even	Fall	
QA10144	Topics on Applied fluid dynamics	HYAKUTAKE TORU	2	Lectures	1･2		English	ESd6554	Even	Fall	
QA10151	Turbulence Measurement	NISHINO KOICHI	2	Lectures	1･2･3		English	ESd6554	Even	Spring	
QA10161	Optical Microfabrication Engineering	MARUO SHOJI	2	Lectures	1･2		English	ESd6436	Even	Spring	
QA10171	Advanced Combined Heat Transfer	SAKAI SEIGO	2	Lectures	1･2･3		English	ESd6555	Even	Spring	
QA10184	Advanced Applied Thermofluid Engineering	ARAKI TAKUTO	2	Lectures	1･2･3		English	ESd6554	Even	Fall	
QA10194	Advanced Cyber-Robotics	KATO RYU	2	Lectures	1･2		English	ESd6234	Odd	Fall	
QA10204	Advanced Thin Film Fabrication	HIROKI OTA	2	Lectures	1･2		English	ESd6443	Even	Fall	
QA10214	Thermal and Fluid Engineering for Electric Rotating Machinery	KABATA YASUO	2	Lectures	1･2・3		Japanese	ESd6555	Even	Fall	
QA10224	Virtual Design Engineering	IWAKI CHIKAKO	2	Lectures	1･2・3		Japanese	ESd6553	Even	Fall	
QA10234	Surface Treatment Technology	WADA KUNIHIKO	2	Lectures	1･2・3		Japanese	ESd6552	Even	Fall	
(S) QA11101 (F) QA11104	Advanced Study in Mechanical Engineering	Each Instructor of Mechanical Engineering	3	Seminars	1･2･3	○	Japanese	ESd6011	Every	Spring･Fall	
(S) QA11201 (F) QA11204	Teaching Practice in Mechanical Engineering	Each Instructor of Mechanical Engineering	1	Exercise	1･2･3		Japanese	ESd6015	Every	Spring･Fall	
(S) QA11301 (F) QA11304	Off-Campus Exercise in Mechanical Engineering	Each Instructor of Mechanical Engineering	1	Exercise	1･2･3		Japanese	ESd6014	Every	Spring･Fall	
(S) QA11401 (F) QA11404	Advanced Study in Mechanical Engineering	Each Instructor of Mechanical Engineering	1	Seminars	1･2･3		Japanese	ESd6012	Every	Spring･Fall	
(S) QA19811 (F) QA19814	Overseas Internship in Mechanical Engineering	Each Instructor of Mechanical Engineering	1	Exercise	1･2･3		Japanese	ESd6014	Every	Spring･Fall	
QA20011	Optical Semiconductor Technology	MUKAI KOKI	2	Lectures	1･2		English	ESd6562	Even	Spring	
QA20021	Advanced Fracture Mechanics of Materials	HASEGAWA MAKOTO	2	Lectures	1･2		English	ESd6594	Even	Spring	

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
QA20031	Special lecture of multi-functional composites	NAKAO WATARU	2	Lectures	1･2		English	ESd6594	Odd	Spring	
QA20044	Advanced Material Forming Process	MAENO TOMOYOSHI	2	Lectures	1･2		English	ESd6552	Odd	Fall	
QA20054	Advanced Functional Material Engineering	NAKATSUGAWA HIROSHI	2	Lectures	1･2		English	ESd6441	Odd	Fall	
QA20064	Fatigue of Metallic Materials	UMEZAWA OSAMU	2	Lectures	1･2		English	ESd6594	Every	4 th Term	
QA20074	Local Equilibrium Theory	HIROSAWA SHOICHI	2	Lectures	1･2		English	ESd6591	Even	Fall	
QA20084	Leading-edge Materials Engineering	UMEZAWA OSAMU , et.al.	2	Lectures	1･2		Japanese	ESd6591	Every	Fall	
QA20094	Application of Design and Engineering of High-Temperature Structural Materials	TODA YOSHIAKI	2	Lectures	1･2		English	ESd6594	Every	Fall	
QA20104	Advanced Computational Modeling of Phase Transformation and Microstructure Evolution	SHIMONO MASATO	2	Lectures	1･2		English	ESd6591	Every	Fall	
QA20114	Microstructure Design in Advanced Materials	YOKO MITARAI	2	Lectures	1･2		English	ESd6595	Every	Fall	
QA20121	Advanced thin film technology	Mitsuru Ohtake	2	Lectures	1･2･3		English	ESd6443	Odd	Spring	
(S)QA21101 (F)QA21104	Advanced exercise in Materials Engineering	UMEZAWA OSAMU , et.al.	3	Seminars	1･2･3	○	Japanese	ESd6021	Every	Spring･Fall	
(S)QA21201 (F)QA21204	Teaching Practice in Materials Engineering	UMEZAWA OSAMU , et.al.	1	Exercise	1･2･3		Japanese	ESd6025	Every	Spring･Fall	
(S)QA21301 (F)QA21304	Off-Campus Exercise in Materials Engineering	UMEZAWA OSAMU , et.al.	1	Exercise	1･2･3		Japanese	ESd6024	Every	Spring･Fall	
(S)QA21401 (F)QA21404	Advanced Study in Materials Engineering	UMEZAWA OSAMU , et.al.	2	Seminars	1･2･3		Japanese	ESd6022	Every	Spring･Fall	
(S)QA29811 (F)QA29814	International Internships in Materials Engineering	UMEZAWA OSAMU , et.al.	1	Exercise	1･2･3		English	ESd6024	Every	Spring･Fall	
QA30014	Advanced Exercises in Computational Hydrodynamics	HINO TAKANORI	2	Lectures	1･2･3		English	ESd6612	Every	Fall	
QA30024	Structural Information System	KAWAMURA YASUMI	2	Lectures	1･2･3		English	ESd6612	Every	Fall	
QA30034	Advanced Ship and Marine Structural Design Methodologies	OKADA TETSUO	2	Lectures	1･2･3		English	ESd6612	Every	Fall	
QA30041	Advanced Spacecraft Attitude Control	UENO SEIYA	2	Lectures	1･2･3		English	ESd6611	Every	Spring	
QA30054	Advanced Seakeeping Qualities	HIRAKAWA YOSHIAKI	2	Lectures	1･2･3		English	ESd6612	Every	Fall	
QA30061	Advanced Aircraft Aerodynamic Design	MIYAJI KOJI	2	Lectures	1･2･3		English	ESd6611	Every	Spring	
QA30071	Advanced Ocean Resources and Energy Engineering	NISHI YOSHIKI	2	Lectures	1･2･3		English	ESd6612	Every	Spring	
QA30084	Advanced Theory in Dynamics of Floating Bodies Engineering	MURAI MOTOHIKO	2	Lectures	1･2･3		English	ESd6612	Every	Fall	
QA30094	Advanced Aerospace Utilization Engineering	HIGUCHI TAKEHIRO	2	Lectures	1･2･3		English	ESd6611	Every	Fall	
QA30104	Advanced Engineering Turbulence	YOUHEI TAKAGI	2	Lectures	1･2･3		English	ESd6612	Every	Fall	
QA30114	Advanced Maritime Traffic Safety	FUKUTO JUNJI , et.al.	2	Lectures	1･2･3		English	ESd6612	Every	Fall	
QA30121	Advanced Engineering for Ocean Development	KATO SHUNJI	2	Lectures	1･2･3		English	ESd6612	Every	Spring	
QA30131	Advanced Systems Engineering Theory of Ship Design	Taiga Mitsuyuki	2	Lectures	1・2・3		English	ESd6612	Every	Spring	
(S)QA31101 (F)QA31104	Advanced Exercises in Ocean and Space System Engineering	Each Instructor of Systems Design for Ocean-Space , et.al.	3	Seminars	1･2･3	○	Japanese	ESd6031	Every	Spring･Fall	
(S)QA31201 (F)QA31204	Advanced Study in Ocean and Space System Engineering	Each Instructor of Systems Design for Ocean-Space , et.al.	2	Seminars	1･2･3		Japanese	ESd6032	Every	Spring･Fall	
(S)QA31301 (F)QA31304	Teaching Practice in Ocean and Space System Engineering	Each Instructor of Systems Design for Ocean-Space , et.al.	1	Exercise	1･2･3		Japanese	ESd6035	Every	Spring･Fall	
(S)QA31401 (F)QA31404	Off-Campus Exercise in Ocean and Space System Engineering	Each Instructor of Systems Design for Ocean-Space , et.al.	1	Exercise	1･2･3		Japanese	ESd6034	Every	Spring･Fall	
(S)QA39811 (F)QA39814	International Internship in Ocean and Space System Engineering	Each Instructor of Systems Design for Ocean-Space , et.al.	1	Exercise	1･2･3		English	ESd6034	Every	Spring･Fall	

Chemistry and Life Science

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
QB10011	Organometallic chemistry	MINATO MAKOTO	2	Lectures	1･2･3		English	ESh6522	Even	Spring	
QB10021	Catalysis engineering	INAGAKI SATOSHI	2	Lectures	1･2･3		English	ESh6603	Even	Spring	
QB10034	Catalyst Design	KUBOTA YOSHIHIRO	2	Lectures	1･2･3		English	ESh6603	Odd	Fall	
QB10041	Photoresponsive Materials	UBUKATA TAKASHI	2	Lectures	1･2･3		English	ESh6531	Even	Spring	
QB10054	Electrochemical Devices	DOKKO KAORU	2	Lectures	1･2･3		English	ESh6544	Odd	Fall	
QB10061	Chemistry of Functional Polymers	OYAMA TOSHIYUKI	2	Lectures	1･2･3		English	ESh6533	Odd	Spring	
QB10071	Solution Theories	SAKOMURA MASARU	2	Lectures	1･2･3		English	ESh6521	Even	Spring	
QB10084	Advanced Course on Organic Electron-transfer Chemistry	ATOBE MAHITO	2	Lectures	1･2･3		English	ESh6532	Even	Fall	
QB10095	Ceramic Materials Design	TATAMI JUNICHI	1	Lectures	1･2･3		English	ESh6592	Every	5 th Term	
QB10105	Advanced Powder Processing and Materials Engineering	IIJIMA MOTOYUKI	1	Lectures	1･2･3		English	ESh6601	Every	5 th Term	
QB10114	Photochemistry and Spectroscopy	SEKI KANEKAZU	2	Lectures	1･2･3		English	ESh6521	Odd	Fall	
QB10121	Quantum theory for large systems	SATO KOTA	2	Lectures	1･2･3		English	ESh6521	Even	Spring	
QB10134	Astrobiology Special Lecture	KEBUKAWA YOKO	2	Lectures	1･2･3		English	ESh6507	Even	Fall	
QB10144	Functional Structural Biology	CHOJIRO KOJIMA	2	Lectures	1･2･3		English	ESh6672	Odd	Fall	
QB10151	Applied Coordination Chemistry	YOSHITAKA YAMAGUCHI	2	Lectures	1･2･3		English	ESh6523	Odd	Spring	
QB10161	Advanced Photophysics and Photochemistry	KIKUCHI AZUSA	2	Lectures	1･2･3		English	ESh6521	Even	Spring	
QB10174	Advanced Structural Life Science	KAWAMURA IZURU	2	Lectures	1･2･3		English	ESh6496	Even	Fall	
QB10181	Molecular design for functional materials	GOTO HIROAKI	2	Lectures	1･2･3		English	ESh6522	Odd	Spring	
QB10191	Advanced Synthetic Organic Chemistry	ITO SUGURU	2	Lectures	1･2･3		English	ESh6532	Odd	Spring	
QB10204	Advanced Solid State Chemistry	YABUUCHI NAOAKI	2	Lectures	1･2･3		English	ESh6523	Odd	Fall	
(S)QB11101 (F)QB11104	Advanced Exercise in Chemistry (PSD)	Each Instructor of Chemistry	3	Seminars	1･2･3	○	Japanese	ESh6011	Every	Spring･Fall	
(S)QB11201 (F)QB11204	Teaching Practice in Chemistry (PSD)	Each Instructor of Chemistry	1	Exercise	1･2･3		Japanese	ESh6015	Every	Spring･Fall	
(S)QB11301 (F)QB11304	Off-Campus Exercise in Chemistry (PSD)	Each Instructor of Chemistry	1	Exercise	1･2･3		Japanese	ESh6014	Every	Spring･Fall	
(S)QB11401 (F)QB11404	Advanced Study in Chemistry (PSD)	Each Instructor of Chemistry	2	Seminars	1･2･3		Japanese	ESh6012	Every	Spring･Fall	
(S)QB11501 (F)QB11504	Advanced Exercise in Chemistry (TED)	Each Instructor of Applied Chemistry	3	Seminars	1･2･3	○	Japanese	ESh6021	Every	Spring･Fall	
(S)QB11601 (F)QB11604	Teaching Practice in Chemistry (TED)	Each Instructor of Applied Chemistry	1	Exercise	1･2･3		Japanese	ESh6025	Every	Spring･Fall	
(S)QB11701 (F)QB11704	Off-Campus Exercise in Chemistry (TED)	Each Instructor of Applied Chemistry	1	Exercise	1･2･3		Japanese	ESh6024	Every	Spring･Fall	
(S)QB11801 (F)QB11804	Advanced Study in Chemistry (TED)	Each Instructor of Applied Chemistry	2	Seminars	1･2･3		Japanese	ESh6022	Every	Spring･Fall	
(S)QB19811 (F)QB19814	International Internship in Chemistry (PSD)	Each Instructor of Chemistry	1	Exercise	1･2･3		English	ESh6014	Every	Spring･Fall	
(S)QB19821 (F)QB19824	International Internship in Chemistry (TED)	Each Instructor of Applied Chemistry	1	Exercise	1･2･3		English	ESh6014	Every	Spring･Fall	
QB20014	Industrial materials and materials chemistry	OKAZAKI SHINJI	2	Lectures	1･2･3		English	ESh6594	Every	Fall	

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
QB20021	Electrochemical Materials	MATSUZAWA KOICHI	2	Lectures	1･2･3		English	ESh6531	Odd	Spring	
QB20034	Advanced Energy Chemistry	MITSUSHIMA SHIGENORI , et.al.	2	Lectures	1･2･3		English	ESh6537	Even	Fall	
QB20044	Materials for Energy Machines	TAKAHASHI KOJI	2	Lectures	1･2･3		English	ESh6551	Even	Fall	
QB20051	Energy Value Chain System	MUGIKURA YOSHIHIRO	2	Lectures	1･2･3		Japanese	ESh6537	Odd	Spring	
QB20061	Energy Conversion Technology	MORITA HIROSHI	2	Lectures	1･2･3		Japanese	ESh6602	Odd	Spring	
QB20074	Material Science for Energy applications	YAMAMOTO TOHRU	2	Lectures	1･2･3		Japanese	ESh6537	Odd	Fall	
QB20081	Environmental Energy Engineering	OKUYAMA KUNITO	2	Lectures	1･2･3		English	ESh6555	Odd	Spring	
QB20091	Reactor and Process Design	HABUKA HITOSHI	2	Lectures	1･2･3		English	ESh6602	Odd	Spring	
QB20101	Chemical Energy Engineering	AIHARA MASAHIKO	2	Lectures	1･2･3		English	ESh6616	Every	Spring	
QB20114	Separation Engineering Excerptus	NAKAMURA KAZUHO	2	Lectures	1･2･3		English	ESh6601	Odd	Fall	
QB20121	Biopolymer Engineering	TAKEDA MINORU	2	Lectures	1･2･3		English	ESh6714	Even	Spring	
QB20134	Advanced Medical Engineering	FUKUDA JUNJI , et.al.	2	Lectures	1･2･3		English	ESh6231	Odd	Fall	
QB20141	Chemical Reactions in the Environment	YOSHITAKE HIDEAKI	2	Lectures	1･2･3		English	ESh6536	Odd	Spring	
QB20154	Biology of Phenome	KURIHARA YASUYUKI	2	Lectures	1･2･3		English	ESh6671	Every	Fall	
QB20164	Advanced Devlopmental Engineering	SUZUKI ATSUSHI	2	Lectures	1･2･3		English	ESh6676	Every	Fall	
QB20174	Advanced Functional Materials Science	KANAI TOSHIMITSU	2	Lectures	1･2･3		English	ESh6593	Odd	Fall	
QB20181	Special Lecture in Tissue Engineering and Regenerative Medicine	FUKUDA JUNJI	2	Lectures	1･2･3		English	ESh6604	Odd	Spring	
QB20194	Advanced Studies of Mixing for Chemical Engineering	MISUMI RYUTA	2	Lectures	1･2･3		English	ESi6601	Every	Fall	
QB20204	Advanced Biochemical Engineering	NITTAMI TADASHI	2	Lectures	1･2･3		English	ESi6604	Odd	Fall	
(S)QB21101 (F)QB21104	Advanced Seminar in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science	3	Seminars	1･2･3	○	Japanese	ESh6042	Every	Spring･Fall	
(S)QB21201 (F)QB21204	Teaching Practice in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	1	Exercise	1･2･3		Japanese	ESh6045	Every	Spring･Fall	
(S)QB21301 (F)QB21304	Off-Campus Exercise in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	1	Exercise	1･2･3		Japanese	ESh6045	Every	Spring･Fall	
(S)QB21401 (F)QB21404	Advanced Study in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	2	Seminars	1･2･3		Japanese	ESh6042	Every	Spring･Fall	
(S)QB29811 (F)QB29814	TED International Internship in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	1	Exercise	1･2･3		Japanese	ESh6044	Every	Spring･Fall	
(S)QB29821 (F)QB29824	PED International Internship in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	1	Exercise	1･2･3		Japanese	ESh6048	Every	Spring･Fall	

Mathematics, Physics, Electrical Engineering and Computer Science

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
QC11101	Advanced Seminar in Mathematical Sciences A	KAJIWARA TAKESHI , et.al.	2	Seminars	1･2･3		Japanese	ESl6013	Every	Spring	
QC11204	Advanced Seminar in Mathematical Sciences B	KAJIWARA TAKESHI , et.al.	2	Seminars	1･2･3		Japanese	ESl6013	Every	Fall	
QC11301	Advanced Seminar in Mathematical Sciences C	KAJIWARA TAKESHI , et.al.	2	Seminars	1･2･3		Japanese	ESl6013	Every	Spring	
QC11404	Advanced Seminar in Mathematical Sciences D	KAJIWARA TAKESHI , et.al.	2	Seminars	1･2･3		Japanese	ESl6013	Every	Fall	
(S)QC11501 (F)QC11504	Advanced Exercises in Mathematical Sciences	KAJIWARA TAKESHI , et.al.	3	Seminars	1･2･3	○	Japanese	ESl6011	Every	Spring･Fall	
(S)QC11601 (F)QC11604	Advanced Training in Mathematical Sciences	KAJIWARA TAKESHI , et.al.	1	Exercise	1･2･3		Japanese	ESl6014	Every	Spring･Fall	
QC20014	Nanoscale Materials Design	OONO KAORU , et.al.	2	Lectures	1･2		English	ESl6432	Every	Fall	
QC20024	Computer Simulation in Quantum System	KURAMOTO TETSUJI	2	Lectures	1･2		English	ESl6494	Every	Fall	
QC20034	Condensed Matter Theory of Nano and Microscopic Systems	SHIRASAKI RYOEN	2	Lectures	1･2		English	ESl6494	Every	Fall	
QC20041	Advanced low temperature physics	SHIMAZU YOSHIHIRO	2	Lectures	1･2		English	ESl6492	Every	Spring	
QC20054	Advanced Magneto-Science	YAMAMOTO ISAO	2	Lectures	1･2		English	ESl6493	Every	Fall	
QC20064	Advanced Magnetics	ICHIYANAGI YUKO	2	Lectures	1･2		English	ESl6441	Every	Fall	
QC20071	Condensed Matter Physics under Multiple Extreme Conditions	UMEHARA IZURU	2	Lectures	1･2		English	ESl6493	Every	Spring	
QC20084	Advanced Physics of Novel Materials	UEHARA MASATOMO	2	Lectures	1･2		English	ESl6493	Every	Fall	
QC20094	Advanced Quantum Information Physics	KOSAKA HIDEO , et.al.	2	Lectures	1･2		English	ESl6432	Every	Fall	
QC20101	Advanced Ultrafast Optics	TAKEDA JUN	2	Lectures	1･2		English	ESl6492	Every	Spring	
QC20114	Precision Laser Spectroscopy	KOH HOURAI	2	Lectures	1･2		English	ESl6495	Every	Fall	
QC20121	Advanced Terahertz Science	KATAYAMA IKUFUMI	2	Lectures	1･2		English	ESl6492	Every	Spring	
QC20131	Advanced Semiconductor Physics	SEKIYA TAKAO	2	Lectures	1･2		English	ESl6492	Every	Spring	
QC20141	Topics in Material Science　at the Nanoscale	SHUDO KENICHI	2	Lectures	1･2		English	ESl6492	Every	Spring	
QC20151	Advanced Experimental Methods in Surface Science	OHNO SHINYA	2	Lectures	1･2		English	ESl6443	Every	Spring	
QC20164	Advanced High Energy　Cosmic Ray Astrophysics	KATAYOSE YUSAKU	2	Lectures	1･2		English	ESl6491	Every	Fall	
QC20174	Advanced Astroparticle Physics	NAKAMURA SHOGO	2	Lectures	1･2		English	ESl6491	Every	Fall	
QC20181	Advanced Neutrino Physics	MINAMINO AKIHIRO	2	Lectures	1･2		Japanese	ESl6491	Every	Spring	
QC20194	Nonlinear Waves	ISHIWATA SHINGO	2	Lectures	1･2		English	ESl6494	Every	Fall	
QC20201	Plasma Experimental Physics	TSUSHIMA AKIRA	2	Lectures	1･2		English	ESl6511	Every	Spring	
QC20211	Advanced condensed matter physics	NASU JOJI	2	Lectures	1･2		English	ESl6493	Every	Spring	
(S)QC21101 (F)QC21104	Advanced Exercise in Physics	Each Instructor of Physics	3	Seminars	1･2･3	○	Japanese	ESl6021	Every	Spring･Fall	
QC21201	Advanced Seminor in Physics, A	Each Instructor of Physics	2	Seminars	1		Japanese	ESl6023	Every	Spring	
QC21304	Advanced Seminor in Physics, B	Each Instructor of Physics	2	Seminars	1		Japanese	ESl6023	Every	Fall	
(S)QC21401 (F)QC21404	Teaching Practice in Physics	Each Instructor of Physics	1	Exercise	1･2･3		Japanese	ESl6025	Every	Spring･Fall	
(S)QC21501 (F)QC21504	Off-Campus Exercise in Physics	Each Instructor of Physics	1	Exercise	1･2･3		Japanese	ESl6024	Every	Spring･Fall	
(S)QC21601 (F)QC21604	Advanced Study in Physics	Each Instructor of Physics	2	Seminars	1･2･3		Japanese	ESl6022	Every	Spring･Fall	

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
QC30011	Advanced Medical Engineering and Informatics	HAMAGAMI TOMOKI , et.al.	2	Lectures	1･2･3		English	ESl6232	Every	Spring	
QC30024	Advanced Antennas and Propagation Engineering II	ARAI HIROYUKI	2	Lectures	1･2･3		English	ESl6564	Even	Fall	
QC30031	Special Issues On Open Source Study	SUGIMOTO CHIKA	2	Lectures	1･2･3		English	ESl6112	Even	Spring	
QC30041	Advanced Theory of Systems, Control and Information	FUJIMOTO YASUTAKA	2	Lectures	1･2･3		English	ESl6566	Odd	Spring	
QC30054	Advanced Digital Circuit Theory	ICHIGE KOICHI	2	Lectures	1･2･3		English	ESl6565	Even	Fall	
QC30064	Advanced Data Storage	TAKEMURA YASUSHI	2	Lectures	1･2･3		English	ESl6563	Every	Fall	
QC30071	Advanced Microwave Engineering	KUGA NOBUHIRO	2	Lectures	1･2･3		English	ESl6564	Odd	Spring	
QC30084	Advanced Multimedia Mobile Communication Networks	HIROYUKI TSUJI	2	Lectures	1･2･3		Japanese	ESl6564	Even	Fall	
QC30094	Advanced Mechatronics	SHIMONO TOMOYUKI	2	Lectures	1･2･3		English	ESl6561	Odd	Fall	
QC30104	Advanced Quantum Optoelectronics	BABA TOSHIHIKO	2	Lectures	1･2･3		English	ESl6444	Every	Fall	
QC30114	Advanced Integrated Nanodevices	OYA TAKAHIDE	2	Lectures	1･2･3		English	ESl6436	Odd	Fall	
QC30121	Advanced Topics of Information Theory	KOHNO RYUJI	2	Lectures	1･2･3		English	ESl6564	Every	Spring	
QC30131	Advanced Intelligent Systems	HAMAGAMI TOMOKI	2	Lectures	1･2･3		English	ESl6124	Even	Spring	
QC30141	Advanced Superconductivity Electronics	YOSHIKAWA NOBUYUKI	2	Lectures	1･2･3		Japanese	ESl6563	Every	Spring	
QC30151	Advanced Power System Engineering	OYAMA TSUTOMU	2	Lectures	1･2･3		English	ESl6561	Even	Spring	
QC30164	Advanced Technology in Power System Protection and Control	TSUJI TAKAO	2	Lectures	1･2･3		English	ESl6561	Every	Fall	
QC30174	Advanced Semiconductor Devices	HANEJI NOBUO	2	Lectures	1･2･3		Japanese	ESl6563	Even	Fall	
QC30181	Advanced Coding Theory	OCHIAI HIDEKI	2	Lectures	1･2･3		English	ESl6564	Odd	Spring	
QC30194	Seminar in Quantum Effect Devices	ARAKAWA TARO	2	Lectures	1･2･3		English	ESl6444	Every	Fall	
QC30201	Advanced Integrated Quantum Devices	YAMANASHI YUKI	2	Lectures	1･2･3		English	ESl6563	Odd	Spring	
QC30214	Advanced Biomedical System Engineering	SHIMA KEISUKE	2	Lectures	1･2･3		English	ESl6234	Odd	Fall	
QC30221	Advanced in Nanophotonics	NISHIJIMA YOSHIAKI	2	Lectures	1･2･3		English	ESl6432	Every	Spring	
QC30231	Colloquium in Applied Physics III-1S	Each Instructor of Applied Physics , et.al.	1	Lectures	1		Japanese	ESl6033	Every	Spring	
QC30241	Colloquium in Applied Physics III-2S	Each Instructor of Applied Physics , et.al.	1	Lectures	2		Japanese	ESl6033	Every	Spring	
QC30251	Colloquium in Applied Physics III-3S	Each Instructor of Applied Physics , et.al.	1	Lectures	3		Japanese	ESl6033	Every	Spring	
QC30264	Colloquium in Applied Physics III-1F	Each Instructor of Applied Physics , et.al.	1	Lectures	1		Japanese	ESl6033	Every	Fall	
QC30274	Colloquium in Applied Physics III-2F	Each Instructor of Applied Physics , et.al.	1	Lectures	2		Japanese	ESl6033	Every	Fall	
QC30284	Colloquium in Applied Physics III-3F	Each Instructor of Applied Physics , et.al.	1	Lectures	3		Japanese	ESl6033	Every	Fall	
QC30291	Colloquium in Information Systems III-1S	Each Instructor fo Information Systems , et.al.	1	Lectures	1		Japanese	ESl6043	Every	Spring	
QC30301	Colloquium in Information Systems III-2S	Each Instructor fo Information Systems , et.al.	1	Lectures	2		Japanese	ESl6043	Every	Spring	
QC30311	Colloquium in Information Systems III-3S	Each Instructor fo Information Systems , et.al.	1	Lectures	3		Japanese	ESl6043	Every	Spring	
QC30324	Colloquium in Information Systems III-1F	Each Instructor fo Information Systems , et.al.	1	Lectures	1		Japanese	ESl6043	Every	Fall	
QC30334	Colloquium in Information Systems III-2F	Each Instructor fo Information Systems , et.al.	1	Lectures	2		Japanese	ESl6043	Every	Fall	
QC30344	Colloquium in Information Systems III-3F	Each Instructor fo Information Systems , et.al.	1	Lectures	3		Japanese	ESl6043	Every	Fall	
QC30351	Colloquium in Electrical and Computer Engineering III-1S	Each Instructor of Electrical and Computer Engineering , et.al.	1	Lectures	1		Japanese	ESl6053	Every	Spring	

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Academic tutorials	Language of instruction	Numbering	Year	Semester	Remarks
QC30361	Colloquium in Electrical and Computer Engineering III-2S	Each Instructor of Electrical and Computer Engineering , et.al.	1	Lectures	2		Japanese	ESl6053	Every	Spring	
QC30371	Colloquium in Electrical and Computer Engineering III-3S	Each Instructor of Electrical and Computer Engineering , et.al.	1	Lectures	3		Japanese	ESl6053	Every	Spring	
QC30384	Colloquium in Electrical and Computer Engineering III-1F	Each Instructor of Electrical and Computer Engineering , et.al.	1	Lectures	1		Japanese	ESl6053	Every	Fall	
QC30394	Colloquium in Electrical and Computer Engineering III-2F	Each Instructor of Electrical and Computer Engineering , et.al.	1	Lectures	2		Japanese	ESl6053	Every	Fall	
QC30404	Colloquium in Electrical and Computer Engineering III-3F	Each Instructor of Electrical and Computer Engineering , et.al.	1	Lectures	3		Japanese	ESl6053	Every	Fall	
QC30414	Advanced Spintronics	SEKIGUCHI KOJI	2	Lectures	1・2・3		English	ESl6563	Every	Fall	
QC30421	Advanced Human Sensing Engineering	SUGIMOTO CHIKA	2	Lectures	1・2・3		English	ESl6122	Even	Spring	
QC30431	Advanced Electrical-Mechanical Energy Conversion	AKATSU KAN	2	Lectures	1・2・3		English	ESl6561	Even	Spring	
QC30444	Evolutionary Intelligence	NAKATA MASAYA	2	Lectures	1・2・3		English	ESl6125	Even	Fall	
QC31104	Exercise in Applied Physics	Each Instructor of Applied Physics , et.al.	1	Exercise	1･2･3		Japanese	ESl6033	Every	Fall	
QC31204	Teaching Practice in Applied Physics	Each Instructor of Applied Physics , et.al.	1	Exercise	1･2･3		Japanese	ESl6035	Every	Fall	
QC31304	Off-Campus Exercise in Applied Physics	Each Instructor of Applied Physics , et.al.	1	Exercise	1･2･3		Japanese	ESl6034	Every	Fall	
QC31404	Advanced Study in Applied Physics	Each Instructor of Applied Physics , et.al.	2	Seminars	1･2･3		Japanese	ESl6032	Every	Fall	
(S)QC31501 (F)QC31504	Advanced Excercise in Applied Physics III-1	Each Instructor of Applied Physics	3	Seminars	1･2･3	○	Japanese	ESl6032	Every	Spring･Fall	
QC31604	Exercise in Information Systems	Each Instructor fo Information Systems , et.al.	1	Exercise	1･2･3		Japanese	ESl6043	Every	Fall	
QC31704	Teaching Practice in Information Systems	Each Instructor fo Information Systems , et.al.	1	Exercise	1･2･3		Japanese	ESl6045	Every	Fall	
QC31804	Off-Campus Exercise in Information Systems	Each Instructor fo Information Systems , et.al.	1	Exercise	1･2･3		Japanese	ESl6044	Every	Fall	
QC31904	Advanced Study in Information Systems	Each Instructor fo Information Systems , et.al.	2	Seminars	1･2･3		Japanese	ESl6042	Every	Fall	
(S)QC32001 (F)QC32004	Advanced Excercise in Information Systems III-1	Each Instructor fo Information Systems	3	Seminars	1･2･3	○	Japanese	ESl6042	Every	Spring･Fall	
QC32104	Exercise in Electrical and Computer Engineering	Each Instructor of Electrical and Computer Engineering , et.al.	1	Exercise	1･2･3		Japanese	ESl6052	Every	Fall	
QC32204	Teaching Practice in Electrical and Computer Engineering	Each Instructor of Electrical and Computer Engineering , et.al.	1	Exercise	1･2･3		Japanese	ESl6055	Every	Fall	
QC32304	Off-Campus Exercise in Electrical and Computer Engineering	Each Instructor of Electrical and Computer Engineering , et.al.	1	Exercise	1･2･3		Japanese	ESl6054	Every	Fall	
QC32404	Advanced Study in Electrical and Computer Engineering	Each Instructor of Electrical and Computer Engineering , et.al.	2	Seminars	1･2･3		Japanese	ESl6052	Every	Fall	
(S)QC32501 (F)QC32504	Advanced Excercise in Electrical and Computer Engineering III-1	Each Instructor of Electrical and Computer Engineering	3	Seminars	1･2･3	○	Japanese	ESl6052	Every	Spring･Fall	
(S)QC39811 (F)QC39814	TED International Internships in Applied Physics	Each Instructor of Applied Physics , et.al.	1	Exercise	1･2･3		English	ESl6034	Every	Spring･Fall	
(S)QC39821 (F)QC39824	TED International Internships in Information Systems	Each Instructor fo Information Systems , et.al.	1	Exercise	1･2･3		English	ESl6044	Every	Spring･Fall	
(S)QC39831 (F)QC39834	International Internships in Electrical and Computer Engineering	Each Instructor of Electrical and Computer Engineering , et.al.	1	Exercise	1･2･3		English	ESl6054	Every	Spring･Fall	

Notes
- ・Classification:「e」indicates Engineering course group, 「s」indicates Science course group, 「i」indicates Information course group and 「p」indicates Professional course group.
- ・Schedule code:(S) indicates Spring semester, (F) indicates Fall semester and (Y) indicates Year-long-course.

VI-3 Master's program

<Pi-type Engineering Degree (PED) Program>

【core courses】

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
p	N000011	Multi-diciplinary Problem Based Learning in Graduate School of Engineering Science	MUKAI KOKI , et.al.	2	Lectures	1・2	Japanese	ESa5002	Every	Spring	
p	(a) N00002A (b) N00002B (c) N00002C (d) N00002D (e) N00002E (f) N00002F (g) N00002G (h) N00002H (i) N00002I (j) N00002J (k) N00002K	Presentation English	ANDO YOSHITAKA, INADA MASATOSHI, KAYABUKI TADASHI	2	Lectures	1・2	English	ESa5006	Every	Spring・Fall	Required course of PED Program. (a)－(d) ,(g)－(j)class: Spring Semester (e)－(f),(k) class: Fall Semester
p	N000064	Innovation and New Business II	OTSUKA KAZUHIRO , et.al.	2	Lectures	1・2	Japanese	ESa4004	Every	Fall	
p	N000071	Project Management I	OKANOYA MASAHIRO	2	Lectures	1・2	English	ESa4002	Every	Spring	
p	N000081	Project Management II	OKANOYA MASAHIRO	2	Lectures	1・2	English	ESa4002	Every	Fall	Intensive course
p	N000111	The Professional Ethics in EU＆US	KITAGAWA TATSUO , et.al.	2	Lectures	1・2	English	ESa4002	Every	Spring	
p	N000121	Effective Business Planning in Global Companies	FUJIOKA KENSUKE	2	Lectures	1・2	Japanese	ESa4002	Every	Spring	
p	N000131	Next Generation's Business Skills as a Global Standard	YAMAGUCHI HIROSHI	2	Lectures	1・2	Japanese	ESa4002	Every	Spring	
p	N000141	Innovation and Challenges I	OTSUKA KAZUHIRO , et.al.	2	Lectures	1・2	Japanese	ESa4002	Every	1 st Term	
p	N000151	Innovation and Challenges II	OTSUKA KAZUHIRO , et.al.	2	Lectures	1・2	Japanese	ESa4002	Every	2 nd Term	
p	N000161	Standardization and Business	MANABU ETO , et.al.	2	Lectures	1・2	Japanese	ESa4002	Every	Spring	
p	N000171	Technological subject in Kanagawa prefecture	TAMECHIKA EMI	2	Lectures	1・2	Japanese	ESa4002	Every	Spring	
p	(S) N009811 (F) N009814	Oversea Internship for Science Engineering	ICHIGE KOICHI	2	Exercise	1・2	Japanese	ESa9004	Every	Spring・Fall	
i	NA10011	Computational Fluid Engineering	MATSUI JUN	2	Lectures	1	English	ESb4554	Every	Spring	
e	NA10024	Turbulence Phenomena	NISHINO KOICHI	2	Lectures	1・2	English	ESb4554	Every	Fall	Can be regarded as making up the modules for students registered for Modules (1) to (6) for the Departments of Mechanical Engineering, Materials Science, and Ocean Engineering.
s	NA20014	Introduction to Materials for Electronics and Optoelectronics	MUKAI KOKI	2	Lectures	1・2	English	ESb4444	Every	Fall	Can be regarded as making up the modules for students registered for Modules (1) to (6) for the Departments of Mechanical Engineering, Materials Science, and Ocean Engineering.
e	NA20024	Introduction of multi-functional composites	NAKAO WATARU	2	Lectures	1・2	English	ESb4594	Every	Fall	
e	NA30014	Ship Motions in Waves	HIRAKAWA YOSHIAKI	2	Lectures	1・2	English	ESb4612	Every	Fall	
e	NA30024	Introduction to Ocean Resources and Energy Engineering	NISHI YOSHIKI	2	Lectures	1・2	English	ESb4612	Every	Fall	
i	NB10014	Advanced Statistical Mechanics	SAKOMURA MASARU	2	Lectures	1・2	English	ESf4521	Odd	Fall	
i	NB10021	Quantum theory for chemical reactions	SATO KOTA	2	Lectures	1・2	English	ESf4521	Even	Spring	
e	NB10031	Catalytic Chemistry	KUBOTA YOSHIHIRO	2	Lectures	1・2	English	ESf4603	Even	Spring	

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
e	NB10044	Design of Polymers and Polymer Systems	OYAMA TOSHIYUKI	2	Lectures	1･2	English	ESf4533	Even	Fall	
s	NB10064	Microbial Biotechnology	KIKUCHI YOSHIMI	2	Lectures	1･2	Japanese	ESf4712	Odd	Fall	
s	NB10074	Advanced Instrumental Analysis	TANIMURA MAKOTO	2	Lectures	1･2	Japanese	ESf4534	Every	Fall	
s	NB10254	Solid State Chemistry	YABUUCHI NAOAKI	2	Lectures	1･2	English	ESh4523	Even	Fall	
i	NB20011	Process Monitoring	OKAZAKI SHINJI	2	Lectures	1･2	English	ESf5565	Every	Spring	
e	NB20024	Advanced Heat Transfer	OKUYAMA KUNITO	2	Lectures	1･2	English	ESf5555	Every	Fall	
e	NB20031	Advanced Transport Phenomena	AIHARA MASAHIKO	2	Lectures	1･2	English	ESf5601	Every	Spring	
e	NB20043	Cutting Edge of Fuel Cell Technology	MITSUSHIMA SHIGENORI , et.al.	2	Lectures	1･2	English	ESf5537	Every	3 rd Term	
s	NC10014	Mathematical Sciences: Algebra	KAJIWARA TAKESHI	2	Lectures	1･2	English	ESj4471	Even	Fall	
s	NC10021	Mathematical Sciences: Geometry	HONDA ATSUFUMI	2	Lectures	1･2	English	ESj4472	Odd	Spring	
s	NC10031	Mathematical Sciences: Analysis	SHIOJI NAOKI	2	Lectures	1･2	English	ESj4473	Even	Spring	
i	NC10044	Mathematical Sciences: Probability and Statistics	KONNO NORIO , et.al.	2	Lectures	1･2	English	ESj4475	Every	Spring/Fall	In charge of Even year : TAKEI MASATO In charge of Odd year : KONNO NORIO Even year : Fall Semester Odd year : Spring Semester
s	NC10051	Mathematical Sciences: Data Sciences	KUROKI MANABU	2	Lectures	1･2	English	ESj4475	Every	Spring	
i	NC20011	Quantum Statistical Mechanics	KURAMOTO TETSUJI	2	Lectures	1･2	English	ESj4494	Even	Spring	
s	NC20021	Nanophysics and Advanced Materials	ICHIYANAGI YUKO , et.al.	2	Lectures	1･2	English	ESj4432	Every	Spring	
s	NC20031	Magneto-Science	UEHARA MASATOMO , et.al.	2	Lectures	1･2	English	ESj4493	Every	Spring	
s	NC20044	Low temperature physics	SHIMAZU YOSHIHIRO	2	Lectures	1･2	English	ESj4492	Odd	Fall	
s	NC20051	Astroparticle Physics	NAKAMURA SHOGO	2	Lectures	1･2	English	ESj4491	Odd	Spring	
s	NC20064	Plasma Physics	TSUSHIMA AKIRA	2	Lectures	1･2	English	ESj4511	Even	Fall	
e	NC30014	Energy System	FUJII YASUMASA , et.al.	2	Lectures	1･2	Japanese	ESj4616	Even	Spring	
i	NC30024	Signal Theory	SHOUKI HIROKI	2	Lectures	1･2	Japanese	ESj4564	Every	Fall	
i	NC30034	Advanced Digital Communications	KOHNO RYUJI	2	Lectures	1･2	English	ESj4564	Every	Fall	
e	NC30041	VLSI System Design	YOSHIKAWA NOBUYUKI	2	Lectures	1･2	English	ESj4563	Every	Spring	
e	NC30054	A Course for Advanced Electronics Products and Their Architecture	YOSHIKAWA NOBUYUKI	2	Lectures	1･2	Japanese	ESj4563	Every	Fall	
i	NC30064	Intelligent Systems	HAMAGAMI TOMOKI	2	Lectures	1･2	English	ESj4124	Every	Fall	
e	NC30071	Material Integration	MATSUKI TAKEO	2	Lectures	1･2	Japanese	ESj4562	Every	Spring	

【specialized module】

Mechanical Engineering, Materials Science, and Ocean Engineering

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(1) Design of Processing Systems	AKINIWA YOSHIAKI	(S) NA15101 (F) NA15104	Design of Processing Systems A	AKINIWA YOSHIAKI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
		(S) NA15201 (F) NA15204	Design of Processing Systems B	AKINIWA YOSHIAKI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
(2) Manufacturing of Processing Systems	AKINIWA YOSHIAKI	(S) NA15301 (F) NA15304	Manufacturing of Processing Systems A	AKINIWA YOSHIAKI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
		(S) NA15401 (F) NA15404	Manufacturing of Processing Systems B	AKINIWA YOSHIAKI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
(3) Design of Thermal and Fluid Systems	MATSUMOTO HIROAKI	(S) NA15501 (F) NA15504	Design of Thermal and Fluid Systems A	MATSUMOTO HIROAKI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
		(S) NA15601 (F) NA15604	Design of Thermal and Fluid Systems B	MATSUMOTO HIROAKI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
(4) Manufacturing of Thermal and Fluid Systems	MATSUMOTO HIROAKI	(S) NA15701 (F) NA15704	Manufacturing of Thermal and Fluid Systems A	MATSUMOTO HIROAKI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
		(S) NA15801 (F) NA15804	Manufacturing of Thermal and Fluid Systems B	MATSUMOTO HIROAKI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
(5) Design of Integrated Systems	SANADA KAZUSHI	(S) NA15901 (F) NA15904	Design of Integrated Systems A	SANADA KAZUSHI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
		(S) NA16001 (F) NA16004	Design of Integrated Systems B	SANADA KAZUSHI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
(6) Manufacturing of Integrated Systems	SANADA KAZUSHI	(S) NA16101 (F) NA16104	Manufacturing of Integrated Systems A	SANADA KAZUSHI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	
		(S) NA16201 (F) NA16204	Manufacturing of Integrated Systems B	SANADA KAZUSHI , et.al.	4	Exercise	1･2	Japanese	ESe5018	Every	Spring･Fall	

Related Lecture courses that make up the module

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
e	NA10024	Turbulence Phenomena	NISHINO KOICHI	2	Lectures	1･2	English	ESb4554	Every	Fall	
e	NA10031	Advanced Strength Design	YU QIANG	2	Lectures	1･2	English	ESc5551	Every	Spring	
i	NA10054	System modeling and control	SANADA KAZUSHI	2	Lectures	1	English	ESc5556	Every	Fall	
e	NA10064	Reactive Gas Dynamics	ISHI KAZUHIRO	2	Lectures	1･2	English	ESc5555	Every	Fall	
e	NA10084	Mechatronics Design	SATO YASUKAZU	2	Lectures	1･2	English	ESd5553	Every	Fall	
e	NA10091	Advanced High-speed Machining	SHINOZUKA JUN	2	Lectures	1	English	ESd5552	Every	Spring	
e	NA10104	Fracture Mechanics	AKINIWA YOSHIAKI	2	Lectures	1	English	ESd5551	Every	Fall	
e	NA10111	Rarefied Gas Dynamics	MATSUMOTO HIROAKI	2	Lectures	1	English	ESd5554	Every	Spring	
e	NA10121	Advanced Robotics	SUGIUCHI HAJIME	2	Lectures	1	English	ESd5556	Every	Spring	
i	NA10131	Intelligent Robotic Agents	MAEDA YUUSUKE	2	Lectures	1	English	ESd5126	Every	Spring	
e	NA10144	Continuum Mechanics	OZAKI SHINGO	2	Lectures	1･2	English	ESd5551	Every	Fall	
e	NA10154	Applied fluid dynamics	HYAKUTAKE TORU	2	Lectures	1	English	ESd5554	Every	Fall	

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
e	NA10164	Design and Principle of Various Actuators	FUCHIWAKI OHMI	2	Lectures	1	English	ESd5556	Every	Fall	
e	NA10174	Micromachine Engineering	MARUO SHOJI	2	Lectures	1･2	English	ESd5436	Every	Fall	
e	NA10184	Combined Heat Transfer	SAKAI SEIGO	2	Lectures	1	English	ESd5555	Every	Fall	
e	NA10194	Applied Thermofluid Engineering	ARAKI TAKUTO	2	Lectures	1	English	ESd5554	Every	Fall	
e	NA10204	Cyber-Robotics	KATO RYU	2	Lectures	1･2	English	ESd5234	Every	Fall	
e	NA10214	Sensor Engineering	HIROKI OTA	2	Lectures	1	English	ESd5443	Every	Fall	
e	NA10221	Compressible Flow	KITAMURA KEIICHI	2	Lectures	1･2	English	ESd5611	Every	Spring	
e	NA10231	Design of Energy Machine Systems	KABATA YASUO , et.al.	2	Lectures	1･2	Japanese	ESd5616	Every	Spring	
s	NA20014	Introduction to Materials for Electronics and Optoelectronics	MUKAI KOKI	2	Lectures	1･2	English	ESb4444	Every	Fall	
s	NC10014	Mathematical Sciences: Algebra	KAJIWARA TAKESHI	2	Lectures	1･2	English	ESj4471	Even	Fall	
p	(S)NA19811 (F)NA19814	Internship in Mechanical Engineering L	Each Instructor of Mechanical Engineering	4	Exercise	1･2	Japanese	ESd5014	Every	Spring･Fall	
p	(S)NA19821 (F)NA19824	Internship in Mechanical Engineering M	Each Instructor of Mechanical Engineering	2	Exercise	1･2	Japanese	ESd5014	Every	Spring･Fall	
p	(S)NA19831 (F)NA19834	Internship in Mechanical Engineering S	Each Instructor of Mechanical Engineering	1	Exercise	1･2	Japanese	ESd5014	Every	Spring･Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(7) Materials Engineering	MUKAI KOKI	(S)NA25101 (F)NA25104	Materials Design Studio	UMEZAWA OSAMU , et.al.	4	Exercise	1･2	Japanese	ESe5028	Every	Spring･Fall	
		(S)NA25201 (F)NA25204	Materials Fabrication Studio	NAKAO WATARU , et.al.	4	Exercise	1･2	Japanese	ESe5028	Every	Spring･Fall	
		(S)NA25301 (F)NA25304	Microstructure Control Studio	UMEZAWA OSAMU , et.al.	4	Exercise	1･2	Japanese	ESe5028	Every	Spring･Fall	
		(S)NA25401 (F)NA25404	Material Characteristics Studio	MUKAI KOKI , et.al.	4	Exercise	1･2	Japanese	ESe5028	Every	Spring･Fall	
(8) Materials Engineering R&D Practice	UMEZAWA OSAMU	(S)NA25501 (F)NA25504	Materials Engineering R&D Studio A	UMEZAWA OSAMU , et.al.	4	Exercise	1･2	Japanese	ESe5028	Every	Spring･Fall	
		(S)NA25601 (F)NA25604	Materials Engineering R&D Studio B	UMEZAWA OSAMU , et.al.	4	Exercise	1･2	Japanese	ESe5028	Every	Spring･Fall	

Related Lecture courses that make up the module

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
s	NA20031	Orientation Analysis on Deformation and Fracture in Polycrystalline Material	UMEZAWA OSAMU	2	Lectures	1･2	English	ESc4594	Every	1 st Term	
e	NA20041	Material Forming Process	MAENO TOMOYOSHI	2	Lectures	1･2	English	ESc4552	Every	Spring	
e	NA20051	Diffusional Transformations in Solids	HIROSAWA SHOICHI	2	Lectures	1･2	English	ESd5594	Every	Spring	
s	NA20064	Solid State Physics	NAKATSUGAWA HIROSHI	2	Lectures	1･2	English	ESd5441	Every	Fall	
e	NA20084	Design and Engineering of High-Temperature Structural Materials	TODA YOSHIAKI	2	Lectures	1･2	English	ESd5594	Every	Fall	
s	NA20094	Computational Modeling of Phase Transformation and Microstructure Evolution	SHIMONO MASATO	2	Lectures	1･2	English	ESd5591	Every	Fall	
e	NA20111	Advanced Strength and Fracture of Materials	HASEGAWA MAKOTO	2	Lectures	1･2	English	ESd5594	Every	Spring	
e	NA20124	Introduction to nanomaterials engineering	Mitsuru Ohtake	2	Lectures	1･2	English	ESd5434	Every	Fall	
e	NA20134	Advanced structural materials: design and application	GOTO SOTA , et.al.	2	Lectures	1･2	Japanese	ESd5595	Every	Fall	
p	(S)NA29811 (F)NA29814	Internship in Materials Engineering L	UMEZAWA OSAMU , et.al.	4	Exercise	1･2	Japanese	ESd5024	Every	Spring･Fall	
p	(S)NA29821 (F)NA29824	Internship in Materials Engineering M	UMEZAWA OSAMU , et.al.	2	Exercise	1･2	Japanese	ESd5024	Every	Spring･Fall	
p	(S)NA29831 (F)NA29834	Internship in Materials Engineering S	UMEZAWA OSAMU , et.al.	1	Exercise	1･2	Japanese	ESd5024	Every	Spring･Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(9) Ocean Space System	HINO TAKANORI	(S) NA35101 (F) NA35104	Studio of Fluid Dynamics for Ocean-Space A	HINO TAKANORI , et.al.	4	Exercise	1･2	Japanese	ESe5038	Every	Spring･Fall	
		(S) NA35201 (F) NA35204	Studio of Fluid Dynamics for Ocean-Space B	HINO TAKANORI , et.al.	4	Exercise	1･2	Japanese	ESe5038	Every	Spring･Fall	
		(S) NA35301 (F) NA35304	Studio of Structural Mechanics for Ocean-Space A	OKADA TETSUO , et.al.	4	Exercise	1･2	Japanese	ESe5038	Every	Spring･Fall	
		(S) NA35401 (F) NA35404	Studio of Structural Mechanics for Ocean-Space B	OKADA TETSUO , et.al.	4	Exercise	1･2	Japanese	ESe5038	Every	Spring･Fall	
		(S) NA35501 (F) NA35504	Studio for ocean space utilization A	MURAI MOTOHIKO , et.al.	4	Exercise	1･2	Japanese	ESe5038	Every	Spring･Fall	
		(S) NA35601 (F) NA35604	Studio for ocean space utilization B	MURAI MOTOHIKO , et.al.	4	Exercise	1･2	Japanese	ESe5038	Every	Spring･Fall	
		(S) NA35701 (F) NA35704	Studio of Maritime Frontier Science A	KAWAMURA YASUMI , et.al.	4	Exercise	1･2	Japanese	ESe5038	Every	Spring･Fall	
		(S) NA35801 (F) NA35804	Studio of Maritime Frontier Science B	KAWAMURA YASUMI , et.al.	4	Exercise	1･2	Japanese	ESe5038	Every	Spring･Fall	
(10) Ocean Space R&D Practice	MIYAJI KOJI	(S) NA35901 (F) NA35904	Studio of R&D in Ocean-Space Engineering A	Each Instructor of Systems Design for Ocean-Space , et.al.	4	Exercise	1･2	Japanese	ESe5038	Every	Spring･Fall	Required course of specialization in Systems Design for Ocean-Space
		(S) NA36001 (F) NA36004	Studio of R&D in Ocean-Space Engineering B	Each Instructor of Systems Design for Ocean-Space , et.al.	4	Exercise	1･2	Japanese	ESe5038	Every	Spring･Fall	Required course of specialization in Systems Design for Ocean-Space

Related Lecture courses that make up the module

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
i	NA30034	Exercises in Computational Hydrodynamics	HINO TAKANORI	2	Lectures	1･2	English	ESc5612	Every	Fall	
i	NA30041	Exercises in Computational Structural Analysis	KAWAMURA YASUMI	2	Lectures	1･2	English	ESc5612	Every	Spring	
e	NA30051	Introduction to Engineering Turbulence	YOUHEI TAKAGI	2	Lectures	1･2	English	ESc5612	Every	Spring	
e	NA30061	Aerospace Utilization Engineering	HIGUCHI TAKEHIRO	2	Lectures	1･2	English	ESc5611	Every	Spring	
e	NA30071	Ship and Marine Structural Design Methodologies	OKADA TETSUO	2	Lectures	1･2	English	ESd5612	Every	Spring	
e	NA30084	Theory in Dynamics of Floating Bodies Engineering	MURAI MOTOHIKO	2	Lectures	1･2	English	ESd4612	Every	Fall	
e	NA30091	Engineering for Ocean Development	KATO SHUNJI , et.al.	2	Lectures	1･2	English	ESd5612	Even	Spring	
e	NA30101	Maritime Traffic Safety	FUKUTO JUNJI , et.al.	2	Lectures	1･2	English	ESd5612	Odd	Spring	
e	NA30114	Rule Making Procedures through Risk-Based Approaches	YOSHIDA KOICHI , et.al.	2	Lectures	1･2	English	ESd5612	Every	Fall	
e	NA30121	Advanced Study of the Ocean Industry	TAKASHINA JYUNSHI	2	Lectures	1･2	English	ESd5612	Every	Spring	
e	(S) NA30131 (F) NA30134	Special Lecture on Ocean and Space Engineering A	UENO SEIYA , et.al.	1	Lectures	1･2	English	ESd5612	Every	Spring･Fall	
e	(S) NA30141 (F) NA30144	Special Lecture on Ocean and Space Engineering B	UENO SEIYA , et.al.	1	Lectures	1･2	English	ESd5612	Every	Spring･Fall	
e	(S) NA30151 (F) NA30154	Special Lecture on Ocean and Space Engineering C	UENO SEIYA , et.al.	1	Lectures	1･2	English	ESd5612	Every	Spring･Fall	
e	(S) NA30161 (F) NA30164	Special Lecture on Ocean and Space Engineering D	UENO SEIYA , et.al.	1	Lectures	1･2	English	ESd5612	Every	Spring･Fall	
e	NA30171	BJ Collaborative Special lecture on Naval Architecture and Offshore Engineering A	MURAI MOTOHIKO , et.al.	4	Lectures	1･2	English	ESd4612	Every	Spring	

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
e	NA30181	BJ Collaborative Special lecture on Naval Architecture and Offshore Engineering B	MURAI MOTOHIKO , et.al.	2	Lectures	1･2	English	ESd4612	Every	Spring	
e	NA30194	BJ Collaborative Special lecture on Naval Architecture and Offshore Engineering C	MURAI MOTOHIKO , et.al.	4	Lectures	1･2	English	ESd4612	Every	Fall	
e	NA30204	BJ Collaborative Special lecture on Naval Architecture and Offshore Engineering D	MURAI MOTOHIKO , et.al.	2	Lectures	1･2	English	ESd4612	Every	Fall	
e	NA30214	Optimal Astrodynamics	UENO SEIYA	2	Lectures	1･2	English	ESd5611	Every	Fall	
e	NA30224	Aircraft Aerodynamic Design	MIYAJI KOJI	2	Lectures	1･2	English	ESd5611	Every	Fall	
e	NA30231	Space Environment Utilization Science	NATSUISAKA MAKOTO	2	Lectures	1･2	English	ESd5611	Every	Spring	
e	NA30241	Advanced theory of space system	ITO YASUYUKI	2	Lectures	1･2	English	ESd5611	Every	Spring	
e	NA30254	Systems Engineering Theory of Ship Design	Taiga Mitsuyuki	2	Lectures	1・2	English	ESd4612	Every	Fall	
e	(S)NA31101 (F)NA31104	Exercise in Ocean and Space Engineering System A	Each Instructor of Systems Design for Ocean･Space , et.al.	2	Seminars	1	Japanese	ESd5031	Every	Spring･Fall	
e	(S)NA31201 (F)NA31204	Exercise in Ocean and Space Engineering System B	Each Instructor of Systems Design for Ocean･Space , et.al.	2	Seminars	1	Japanese	ESd5031	Every	Spring･Fall	
p	(S)NA31501 (F)NA31504	Industrial Training in Ocean and Space System Engineering	Each Instructor of Systems Design for Ocean･Space , et.al.	2	Seminars	1･2	Japanese	ESd5034	Every	Spring･Fall	
p	(S)NA31601 (F)NA31604	Overseas Training in Marine and Space System Engineering	Each Instructor of Systems Design for Ocean･Space , et.al.	2	Seminars	1･2	English	ESd5034	Every	Spring･Fall	
p	(S)NA31701 (F)NA31704	Practical Engineering Training in Ocean-Space	Each Instructor of Systems Design for Ocean･Space , et.al.	4	Seminars	1･2	Japanese	ESd5034	Every	Spring･Fall	
p	(S)NA39811 (F)NA39814	Inntership in Ocean and Space System Engineering L	Each Instructor of Systems Design for Ocean･Space , et.al.	4	Exercise	1･2	English	ESd5034	Every	Spring･Fall	
p	(S)NA39821 (F)NA39824	Inntership in Ocean and Space System Engineering M	Each Instructor of Systems Design for Ocean･Space , et.al.	2	Exercise	1･2	English	ESd5034	Every	Spring･Fall	
p	(S)NA39831 (F)NA39834	Inntership in Ocean and Space System Engineering S	Each Instructor of Systems Design for Ocean･Space , et.al.	1	Exercise	1･2	English	ESd5034	Every	Spring･Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(11) Aerospace Systems	ISHI KAZUHIRO	(S)NA36101 (F)NA36104	Studio of Aerospace System A	Each Instructor of Aerospace Engineering	4	Exercise	1･2	English	ESe5048	Every	Spring･Fall	
		(S)NA36201 (F)NA36204	Studio of Aerospace System B	Each Instructor of Aerospace Engineering	4	Exercise	1･2	English	ESe5048	Every	Spring･Fall	

Related Lecture courses that make up the module

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
e	NA10064	Reactive Gas Dynamics	ISHI KAZUHIRO	2	Lectures	1･2	English	ESc5555	Every	Fall	
e	NA10074	Space Propulsion Engineering	YOSHINORI TAKAO	2	Lectures	1	English	ESc5611	Every	Fall	
e	NA20111	Advanced Strength and Fracture of Materials	HASEGAWA MAKOTO	2	Lectures	1･2	English	ESd5594	Every	Spring	
e	NA10221	Compressible Flow	KITAMURA KEIICHI	2	Lectures	1･2	English	ESd5611	Every	Spring	
p	(S)NA19811 (F)NA19814	Internship in Mechanical Engineering L	Each Instructor of Mechanical Engineering	4	Exercise	1･2	Japanese	ESd5014	Every	Spring･Fall	
p	(S)NA19821 (F)NA19824	Internship in Mechanical Engineering M	Each Instructor of Mechanical Engineering	2	Exercise	1･2	Japanese	ESd5014	Every	Spring･Fall	
p	(S)NA19831 (F)NA19834	Internship in Mechanical Engineering S	Each Instructor of Mechanical Engineering	1	Exercise	1･2	Japanese	ESd5014	Every	Spring･Fall	
p	(S)NA29811 (F)NA29814	Internship in Materials Engineering L	UMEZAWA OSAMU , et.al.	4	Exercise	1･2	Japanese	ESd5024	Every	Spring･Fall	
p	(S)NA29821 (F)NA29824	Internship in Materials Engineering M	UMEZAWA OSAMU , et.al.	2	Exercise	1･2	Japanese	ESd5024	Every	Spring･Fall	
p	(S)NA29831 (F)NA29834	Internship in Materials Engineering S	UMEZAWA OSAMU , et.al.	1	Exercise	1･2	Japanese	ESd5024	Every	Spring･Fall	
e	NA30061	Aerospace Utilization Engineering	HIGUCHI TAKEHIRO	2	Lectures	1･2	English	ESc5611	Every	Spring	
e	NA30214	Optimal Astrodynamics	UENO SEIYA	2	Lectures	1･2	English	ESd5611	Every	Fall	
e	NA30224	Aircraft Aerodynamic Design	MIYAJI KOJI	2	Lectures	1･2	English	ESd5611	Every	Fall	
e	NA30231	Space Environment Utilization Science	NATSUISAKA MAKOTO	2	Lectures	1･2	English	ESd5611	Every	Spring	
e	NA30241	Advanced theory of space system	ITO YASUYUKI	2	Lectures	1･2	English	ESd5611	Every	Spring	
p	(S)NA31501 (F)NA31504	Industrial Training in Ocean and Space System Engineering	Each Instructor of Systems Design for Ocean･Space , et.al.	2	Seminars	1･2	Japanese	ESd5034	Every	Spring･Fall	
p	(S)NA31601 (F)NA31604	Overseas Training in Marine and Space System Engineering	Each Instructor of Systems Design for Ocean･Space , et.al.	2	Seminars	1･2	English	ESd5034	Every	Spring･Fall	
p	(S)NA31701 (F)NA31704	Practical Engineering Training in Ocean-Space	Each Instructor of Systems Design for Ocean･Space , et.al.	4	Seminars	1･2	Japanese	ESd5034	Every	Spring･Fall	
p	(S)NA39811 (F)NA39814	Inntership in Ocean and Space System Engineering L	Each Instructor of Systems Design for Ocean･Space , et.al.	4	Exercise	1･2	English	ESd5034	Every	Spring･Fall	
p	(S)NA39821 (F)NA39824	Inntership in Ocean and Space System Engineering M	Each Instructor of Systems Design for Ocean･Space , et.al.	2	Exercise	1･2	English	ESd5034	Every	Spring･Fall	
p	(S)NA39831 (F)NA39834	Inntership in Ocean and Space System Engineering S	Each Instructor of Systems Design for Ocean･Space , et.al.	1	Exercise	1･2	English	ESd5034	Every	Spring･Fall	

Note: Students studying Aerospace Engineering are required to register for four modules from those listed on Page 52 or Pages 47 to 51.

【specialized module】

Chemistry and Life Science

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(1) Analysis Technology for Advanced Process Engineering	AIHARA MASAHIKO	NB25101	Advanced Chemical Process Analysis Studio S	OKUYAMA KUNITO , et.al.	4	Exercise	1	Japanese	ESi5048	Every	Spring	
		NB25204	Advanced Chemical Process Analysis Studio F	OKUYAMA KUNITO , et.al.	4	Exercise	1	Japanese	ESi5048	Every	Fall	
(2) Technology Innovation for Next-generation Process Engineering	AIHARA MASAHIKO	NB25301	New Generation Chemical Process Engineering Studio S	OKUYAMA KUNITO , et.al.	4	Exercise	2	Japanese	ESi5048	Every	Spring	
		NB25404	New Generation Chemical Process Engineering Studio F	OKUYAMA KUNITO , et.al.	4	Exercise	2	Japanese	ESi5048	Every	Fall	
(3) Analysis Technology for Energy Creation	TAKAHASHI KOJI	NB25501	Exercise in Analysis for Energy Creation S	TAKAHASHI KOJI , et.al.	4	Exercise	1	Japanese	ESi5048	Every	Spring	
		NB25604	Exercise in Analysis for Energy Creation F	TAKAHASHI KOJI , et.al.	4	Exercise	1	Japanese	ESi5048	Every	Fall	
(4) Technology Innovation for Energy Creation	MITSUSHIMA SHIGENORI	NB25701	Exercise in Technology for Energy Creation S	TAKAHASHI KOJI , et.al.	4	Exercise	2	Japanese	ESi5048	Every	Spring	
		NB25804	Exercise in Technology for Energy Creation F	TAKAHASHI KOJI , et.al.	4	Exercise	2	Japanese	ESi5048	Every	Fall	
(5) Analysis Technology for Life Science	TAKEDA MINORU	NB25901	Analysis Studio S in Biotechnologies and Life Sciences	TAKEDA MINORU , et.al.	4	Exercise	1	Japanese	ESi5048	Every	Spring	
		NB26004	Analysis Studio F in Biotechnologies and Life Sciences	TAKEDA MINORU , et.al.	4	Exercise	1	Japanese	ESi5048	Every	Fall	
(6) Technology Innovation for Life Science	TAKEDA MINORU	NB26101	Synthesis Studio S in Biotechnologies and Life Sciences	TAKEDA MINORU , et.al.	4	Exercise	2	Japanese	ESi5048	Every	Spring	
		NB26204	Synthesis Studio F in Biotechnologies and Life Sciences	TAKEDA MINORU , et.al.	4	Exercise	2	Japanese	ESi5048	Every	Fall	

Related Lecture courses that make up the module

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
s	NB10214	Structural Biology	CHOJIRO KOJIMA	2	Lectures	1･2	English	ESh5672	Odd	Spring	
s	NB10221	Chemical Astrobiology	KEBUKAWA YOKO	2	Lectures	1･2	English	ESh5507	Even	Spring	
e	NB20051	Basic Energy Chemistry	MITSUSHIMA SHIGENORI , et.al.	2	Lectures	1･2	English	ESg5537	Every	Spring	
e	NB20064	Materials Science for Energy Conversion	MATSUZAWA KOICHI	2	Lectures	1･2	English	ESg5531	Every	Fall	
s	NB20071	Functional Genome Science	KURIHARA YASUYUKI	2	Lectures	1･2	English	ESg5671	Every	Fall	
e	NB20084	Materials for Strength Components	TAKAHASHI KOJI	2	Lectures	1･2	English	ESg5551	Odd	Fall	
e	NB20104	Environmental Separation Engineering	NAKAMURA KAZUHO , et.al.	2	Lectures	1･2	English	ESg5601	Every	Fall	
e	NB20114	Introduction to Energy Value Chain System	MUGIKURA YOSHIHIRO	2	Lectures	1･2	Japanese	ESg5537	Every	Fall	
e	NB20124	Fuel Cell Technology	MORITA HIROSHI	2	Lectures	1･2	Japanese	ESg5602	Every	Fall	
e	NB20131	Ceramics and Energy Technologies	YAMAMOTO TOHRU	2	Lectures	1･2	Japanese	ESg5537	Every	Spring	
e	NB20141	Developmental Engineering	SUZUKI ATSUSHI	2	Lectures	1･2	English	ESg5676	Every	Spring	
e	NB20151	Risk Analysis	SUYAMA KOICHI , et.al.	2	Lectures	1･2	Japanese	ESh5221	Every	Spring	
e	NB20164	Recurrent Education for Engineering	OKAZAKI SHINJI	2	Lectures	1･2	English	ESh5181	Odd	Fall	

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
e	NB20284	Mixing for Chemical Engineering	MISUMI RYUTA	2	Lectures	1･2	English	ESh5601	Every	Fall	
e	NB20181	Material Production Technology	HABUKA HITOSHI	2	Lectures	1･2	English	ESh5602	Every	Spring	
e	NB20191	Microbial Biotechnology	TAKEDA MINORU	2	Lectures	1･2	English	ESh5712	Every	Fall	
e	NB20204	Medical Engineering	FUKUDA JUNJI , et.al.	2	Lectures	1･2	English	ESh5231	Odd	Fall	
p	NB20214	Technology-Development & Society	NAKAMURA KAZUHO , et.al.	2	Lectures	1･2	Japanese	ESh5602	Every	Spring	
e	NB20221	Physical Chemistry for Environmental Sciences	YOSHITAKE HIDEAKI	2	Lectures	1･2	English	ESh5536	Every	Spring	
p	NB20231	Problem-Based Learning in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	2	Lectures	1･2	Japanese	ESh5049	Every	Spring	
i	NB20241	Simulation for Chemical Processes	YAMAMOTO HIROSHI	2	Lectures	1･2	Japanese	ESh5602	Every	Spring	
e	NB20254	Functional Materials Science	KANAI TOSHIMITSU	2	Lectures	1･2	English	ESh5593	Even	Fall	
e	NB20261	Tissue Engineering and Regenerative Medicine	FUKUDA JUNJI	2	Lectures	1･2	English	ESh5604	Odd	Spring	
e	NB20271	Materials Engineering for Machinery and Apparatus	TAKAHASHI KOJI	2	Lectures	1･2	English	ESh5551	Odd	Spring	
p	(S) NB29811 (F) NB29814	Internship L in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	4	Exercise	1･2	Japanese	ESh5044	Every	Spring･Fall	
p	(S) NB29821 (F) NB29824	Internship M in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	2	Exercise	1･2	Japanese	ESh5044	Every	Spring･Fall	
p	(S) NB29831 (F) NB29834	Internship S in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	1	Exercise	1･2	Japanese	ESh5044	Every	Spring･Fall	

【specialized module】

Mathematics, Physics, Electrical Engineering and Computer Science

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(1) VLSI Design	HANEJI NOBUO	NC35101	VLSI Design S	HANEJI NOBUO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC35204	VLSI Design F	HANEJI NOBUO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	
(2) Open Source Engineering	HAMAGAMI TOMOKI	NC35301	Practical Open Source Engineering S	SUGIMOTO CHIKA , et.al.	4	Exercise	1･2	Japanese	ESm5048	Every	Spring	
		NC35404	Practical Open Source Engineering F	SUGIMOTO CHIKA , et.al.	4	Exercise	1･2	Japanese	ESm5048	Every	Fall	
(3) Control	FUJIMOTO YASUTAKA	NC35501	Motion Control S	FUJIMOTO YASUTAKA , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC35604	Motion Control F	FUJIMOTO YASUTAKA , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	
(4) Nanoelectronics	OYA TAKAHIDE	NC35701	Nanoelectronics S	OYA TAKAHIDE , et.al.	4	Exercise	1･2	Japanese	ESm5038	Every	Spring	
		NC35804	Nanoelectronics F	OYA TAKAHIDE , et.al.	4	Exercise	1･2	Japanese	ESm5038	Every	Fall	
(5) Computation Techniques of Light Waves	BABA TOSHIHIKO	NC35901	Computation Techniques of Light Waves S	BABA TOSHIHIKO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC36004	Computation Techniques of Light Waves F	BABA TOSHIHIKO , et.al.	4	Exercise	1･2	English	ESm5058	Every	Fall	
(6) Science, Engineering and Design of Antennas	KUGA NOBUHIRO	NC36101	Science, Engineering and Design of Antennas S	KUGA NOBUHIRO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC36204	Science, Engineering and Design of Antennas F	KUGA NOBUHIRO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	
(7) Information and Communication Technology	OCHIAI HIDEKI	NC36301	Information and Communication Technology S	OCHIAI HIDEKI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC36404	Information and Communication Technology F	OCHIAI HIDEKI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	
(8) Electric Energy Supplies	TSUJI TAKAO	NC36501	Electric Energy Supplies S	TSUJI TAKAO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC36604	Electric Energy Supplies F	TSUJI TAKAO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	
(9) Advanced Electronics and Materials	YOSHIKAWA NOBUYUKI	NC36701	Advanced Electronics and Materials S	YOSHIKAWA NOBUYUKI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC36804	Advanced Electronics and Materials F	YOSHIKAWA NOBUYUKI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	
(10) Integrated Electronics	ADACHI TAKEHIKO	NC36901	Integrated Electronics S	HANEJI NOBUO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC37004	Integrated Electronics F	HANEJI NOBUO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	
(11) Electrical and Computer Engineering for Future Medical Care and Welfare	YOSHIKAWA NOBUYUKI	NC37101	Electrical and Computer Engineering for Future Medical Care and Welfare S	YOSHIKAWA NOBUYUKI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC37204	Electrical and Computer Engineering for Future Medical Care and Welfare F	YOSHIKAWA NOBUYUKI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	
(12) Environment Adaptive Smart Systems	SHIMONO TOMOYUKI	NC37301	Environment Adaptive Smart Systems S	SHIMONO TOMOYUKI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC37404	Environment Adaptive Smart Systems F	SHIMONO TOMOYUKI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(13) Wireless Communication Systems	ICHIGE KOICHI	NC37501	Wireless Communication Systems S	ICHIGE KOICHI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC37604	Wireless Communication Systems F	ICHIGE KOICHI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	
(14) Advanced Photonics	ARAKAWA TARO	NC37701	Advanced Photonics S	ARAKAWA TARO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC37804	Advanced Photonics F	ARAKAWA TARO , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	
(15) High Information Network Systems	HAMAGAMI TOMOKI	NC37901	High Information Network Systems S	HAMAGAMI TOMOKI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Spring	
		NC38004	High Information Network Systems F	HAMAGAMI TOMOKI , et.al.	4	Exercise	1･2	Japanese	ESm5058	Every	Fall	

Related Lecture courses that make up the module

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
e	NC30084	Coding Theory	OCHIAI HIDEKI	2	Lectures	1･2	English	ESk4564	Every	Fall	
e	NC30091	Digital Circuit Theory	ICHIGE KOICHI	2	Lectures	1･2	English	ESk4565	Every	Spring	
e	NC30101	Nano photonics	NISHIJIMA YOSHIAKI	2	Lectures	1･2	English	ESk4432	Every	Spring	
e	NC30114	Advanced Discrete Systems	FUJIMOTO YASUTAKA	2	Lectures	1･2	English	ESk4566	Every	Fall	
s	NC30121	Photonics Theory	BABA TOSHIHIKO	2	Lectures	1･2	English	ESl4444	Every	Spring	
e	NC30131	Power System Planning	OYAMA TSUTOMU	2	Lectures	1･2	English	ESl5561	Every	Spring	
e	NC30141	Advanced Semiconductor Physics	HANEJI NOBUO , et.al.	2	Lectures	1･2	English	ESl5563	Odd	Fall	
e	NC30164	Semiconductor Optoelectronics	ARAKAWA TARO	2	Lectures	1･2	English	ESk5444	Odd	Fall	
i	NC30171	Information & Communications Infrastructure	SOICHI WATANABE	2	Lectures	1･2	Japanese	ESl5564	Every	Spring	
i	NC30184	Multimedia Mobile Communication Networks	HIROYUKI TSUJI	2	Lectures	1･2	English	ESl5564	Every	Fall	
e	NC30191	Microwave Engineering	KUGA NOBUHIRO	2	Lectures	1･2	English	ESl5564	Every	Spring	
i	NC30204	Fault Tolerant Systems	TANAKA HIROKAZU	2	Lectures	1･2	Japanese	ESl5564	Every	Fall	
s	NC30211	Advanced Electromagnetism	KUMADA AKIKO	2	Lectures	1･2	Japanese	ESl5561	Even	Spring	
e	NC30234	CMOS Analog Circuit Design	OGAWA ATSUSHI	2	Lectures	1･2	Japanese	ESl5563	Every	Fall	
e	NC30241	Integrated Nanodevices	OYA TAKAHIDE	2	Lectures	1･2	English	ESl5436	Every	Spring	
e	NC30254	Advanced Electronic Devices	TAKEMURA YASUSHI	2	Lectures	1･2	English	ESk5563	Even	Fall	
i	NC30261	Colloquium in Medical Engineering and Informatics Based on Information Communication Technology	SHIMONO TOMOYUKI , et.al.	2	Lectures	1･2	English	ESl5131	Every	Spring	
e	NC30271	A Basis of Smartgrid Technology	TSUJI TAKAO	2	Lectures	1･2	English	ESl5561	Every	Spring	
s	NC30281	Superconducting Electronics	YAMANASHI YUKI	2	Lectures	1･2	English	ESl5563	Every	Spring	
e	NC30294	Measurement of Mobile Antenna Systems	ARAI HIROYUKI	2	Lectures	1･2	English	ESl5564	Odd	Fall	
e	NC30301	Motion Control Systems	SHIMONO TOMOYUKI	2	Lectures	1･2	English	ESl5561	Every	Spring	
i	NC30314	Human Factors and Ergonomics	SHIMA KEISUKE	2	Lectures	1･2	English	ESl5234	Every	Fall	

Classification	Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
e	NC30381	Multimedia Wireless Communication Networks	RI KANHOU	2	Lectures	1・2	English	ESl5564	Every	Spring	
e	NC30391	Spintronics	SEKIGUCHI KOJI	2	Lectures	1・2	English	ESI5441	Every	Spring	
i	NC30404	Human Sensing Engineering	SUGIMOTO CHIKA	2	Lectures	1・2	English	ESl5122	Every	Fall	
e	NC30411	Electriccal-Mechanical Energy Conversion	AKATSU KAN	2	Lectures	1･2	English	ESl4561	Every	Spring	
i	NC30421	Metaheuristics	NAKATA MASAYA	2	Lectures	1･2	English	ES l 4125	Every	Spring	
p	(S) NC39811 (F) NC39814	Overseas Internships in Applied Physics L	Each Instructor of Applied Physics , et.al.	4	Exercise	1･2	English	ESl5034	Every	Spring･Fall	
p	(S) NC39821 (F) NC39824	Overseas Internships in Applied Physics M	Each Instructor of Applied Physics , et.al.	2	Exercise	1･2	English	ESl5034	Every	Spring･Fall	
p	(S) NC39831 (F) NC39834	Overseas Internships in Applied Physics S	Each Instructor of Applied Physics , et.al.	1	Exercise	1･2	English	ESl5034	Every	Spring･Fall	

Notes
・Classification:「e」indicates Engineering course group, 「s」indicates Science course group, 「i」indicates Information course group and 「p」indicates Professional course group.
・Schedule code:(S) indicates Spring semester, (F) indicates Fall semester and (Y) indicates Year-long-course.

VI-4 Master's program

<Pi-type Engineering Degree (PED) Program>

Mechanical Engineering, Materials Science, and Ocean Engineering

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(1) Advanced Design of Processing Systems	AKINIWA YOSHIAKI	(S) QA15101 (F) QA15104	Sub-Research Studio A in Mechanical Engineering	Each Instructor of Mechanical Engineering	2	Exercise	1・2・3	Japanese	ESe6018	Every	Spring・Fall	
		(S) QA15201 (F) QA15204	Sub-Research Studio B in Mechanical Engineering	Each Instructor of Mechanical Engineering	2	Exercise	1・2・3	Japanese	ESe6018	Every	Spring・Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QA10021	Advanced Ultra High-speed Machining	SHINOZUKA JUN	2	Lectures	1	English	ESd6552	Odd	Spring	
QA10034	Advanced Lectures on Fracture Mechanics	AKINIWA YOSHIAKI	2	Lectures	1	English	ESd6551	Even	Fall	
QA10081	Advanced Lectures on Elastoplasticity Theory	OZAKI SHINGO	2	Lectures	1・2	English	ESd6551	Odd	Spring	
QA10101	Non-linear Structural Simulation	YU QIANG	2	Lectures	1・2	English	ESd6551	Odd	Spring	
QA10161	Optical Microfabrication Engineering	MARUO SHOJI	2	Lectures	1・2	English	ESd6436	Even	Spring	
QA10204	Advanced Thin Film Fabrication	HIROKI OTA	2	Lectures	1・2	English	ESd6443	Even	Fall	
QA10214	Thermal and Fluid Engineering for Electric Rotating Machinery	KABATA YASUO	2	Lectures	1・2・3	Japanese	ESd6555	Even	Fall	
QA10224	Virtual Design Engineering	IWAKI CHIKAKO	2	Lectures	1・2・3	Japanese	ESd6553	Even	Fall	
QA10234	Surface Treatment Technology	WADA KUNIHIKO	2	Lectures	1・2・3	Japanese	ESd6552	Even	Fall	
(S) QA19811 (F) QA19814	Overseas Internship in Mechanical Engineering	Each Instructor of Mechanical Engineering	1	Exercise	1・2・3	Japanese	ESd6014	Every	Spring・Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(2) Advanced Design of Thermal and Fluid Systems	MATSUMOTO HIROAKI	(S) QA15101 (F) QA15104	Sub-Research Studio A in Mechanical Engineering	Each Instructor of Mechanical Engineering	2	Exercise	1・2・3	Japanese	ESe6018	Every	Spring・Fall	
		(S) QA15201 (F) QA15204	Sub-Research Studio B in Mechanical Engineering	Each Instructor of Mechanical Engineering	2	Exercise	1・2・3	Japanese	ESe6018	Every	Spring・Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QA10041	Advanced Turbo Machinery	MATSUI JUN	2	Lectures	1・2・3	Japanese	ESd6554	Odd	Spring	
QA10051	Advanced Rarefied Gas Dynamics	MATSUMOTO HIROAKI	2	Lectures	1・2	English	ESd6554	Even	Spring	
QA10074	Space Propulsion Engineering, Advanced	YOSHINORI TAKAO	2	Lectures	1・2	English	ESd6611	Odd	Fall	
QA10094	Advanced Computational Fluid Dynamics	KITAMURA KEIICHI	2	Lectures	1・2	English	ESd6611	Odd	Fall	
QA10134	Thermo-Fluid Dynamics of Combustion	ISHI KAZUHIRO	2	Lectures	1・2・3	English	ESd6555	Even	Fall	
QA10144	Topics on Applied fluid dynamics	HYAKUTAKE TORU	2	Lectures	1・2	English	ESd6554	Even	Fall	
QA10151	Turbulence Measurement	NISHINO KOICHI	2	Lectures	1・2・3	English	ESd6554	Even	Spring	
QA10171	Advanced Combined Heat Transfer	SAKAI SEIGO	2	Lectures	1・2・3	English	ESd6555	Even	Spring	
QA10184	Advanced Applied Thermofluid Engineering	ARAKI TAKUTO	2	Lectures	1・2・3	English	ESd6554	Even	Fall	
(S) QA19811 (F) QA19814	Overseas Internship in Mechanical Engineering	Each Instructor of Mechanical Engineering	1	Exercise	1・2・3	Japanese	ESd6014	Every	Spring・Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(3) Advanced Design of Integrated Systems	SANADA KAZUSHI	(S) QA15101 (F) QA15104	Sub-Research Studio A in Mechanical Engineering	Each Instructor of Mechanical Engineering	2	Exercise	1・2・3	Japanese	ESe6018	Every	Spring・Fall	
		(S) QA15201 (F) QA15204	Sub-Research Studio B in Mechanical Engineering	Each Instructor of Mechanical Engineering	2	Exercise	1・2・3	Japanese	ESe6018	Every	Spring・Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QA10014	Advanced Mechatronics Design	SATO YASUKAZU	2	Lectures	1・2	English	ESd6553	Even	Fall	
QA10061	Robotic Manipulation	MAEDA YUUSUKE	2	Lectures	1	English	ESd6557	Even	Spring	
QA10114	In-depth lecture on micro manipulation	FUCHIWAKI OHMI	2	Lectures	2	English	ESd6436	Odd	Fall	
QA10124	Special issues on mechanical system control	SANADA KAZUSHI	2	Lectures	1	English	ESd6556	Odd	Fall	
QA10194	Advanced Cyber-Robotics	KATO RYU	2	Lectures	1・2	English	ESd6234	Odd	Fall	
(S) QA19811 (F) QA19814	Overseas Internship in Mechanical Engineering	Each Instructor of Mechanical Engineering	1	Exercise	1・2・3	Japanese	ESd6014	Every	Spring・Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(4) Advanced Materials Design	UMEZAWA OSAMU	(S) QA25101 (F) QA25104	Sub-research exercise in Materials Engineering	UMEZAWA OSAMU , et.al.	4	Seminars	1・2・3	Japanese	ESe6021	Every	Spring・Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QA20011	Optical Semiconductor Technology	MUKAI KOKI	2	Lectures	1・2	English	ESd6562	Even	Spring	
QA20021	Advanced Fracture Mechanics of Materials	HASEGAWA MAKOTO	2	Lectures	1・2	English	ESd6594	#N/A	Spring	
QA20031	Special lecture of multi-functional composites	NAKAO WATARU	2	Lectures	1・2	English	ESd6594	Odd	Spring	
QA20044	Advanced Material Forming Process	MAENO TOMOYOSHI	2	Lectures	1・2	English	ESd6552	Odd	Fall	
QA20054	Advanced Functional Material Engineering	NAKATSUGAWA HIROSHI	2	Lectures	1・2	English	ESd6441	Odd	Fall	
QA20064	Fatigue of Metallic Materials	UMEZAWA OSAMU	2	Lectures	1・2	English	ESd6594	Every	4 th Term	
QA20074	Local Equilibrium Theory	HIROSAWA SHOICHI	2	Lectures	1・2	English	ESd6591	Even	Fall	
QA20084	Leading-edge Materials Engineering	UMEZAWA OSAMU , et.al.	2	Lectures	1・2	Japanese	ESd6591	Every	Fall	
QA20094	Application of Design and Engineering of High-Temperature Structural Materials	TODA YOSHIAKI	2	Lectures	1・2	English	ESd6594	Every	Fall	
QA20104	Advanced Computational Modeling of Phase Transformation and Microstructure Evolution	SHIMONO MASATO	2	Lectures	1・2	English	ESd6591	Every	Fall	
QA20114	Microstructure Design in Advanced Materials	YOKO MITARAI	2	Lectures	1・2	English	ESd6595	Every	Fall	
QA20121	Advanced thin film technology	Mitsuru Ohtake	2	Lectures	1・2・3	English	ESd6443	Odd	Spring	
(S) QA29811 (F) QA29814	International Internships in Materials Engineering	UMEZAWA OSAMU , et.al.	1	Exercise	1・2・3	English	ESd6024	Every	Spring・Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(5) Macro System Design	OKADA TETSUO	(S) QA35101 (F) QA35104	Sub-Research Studio (Ocean and Space Engineering)	Each Instructor of Systems Design for Ocean-Space , et.al.	4	Seminars	1･2･3	Japanese	ESe6038	Every	Spring･Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QA30014	Advanced Exercises in Computational Hydrodynamics	HINO TAKANORI	2	Lectures	1･2･3	English	ESd6612	Every	Fall	
QA30024	Structural Information System	KAWAMURA YASUMI	2	Lectures	1･2･3	English	ESd6612	Every	Fall	
QA30034	Advanced Ship and Marine Structural Design Methodologies	OKADA TETSUO	2	Lectures	1･2･3	English	ESd6612	Every	Fall	
QA30041	Advanced Spacecraft Attitude Control	UENO SEIYA	2	Lectures	1･2･3	English	ESd6611	Every	Spring	
QA30054	Advanced Seakeeping Qualities	HIRAKAWA YOSHIAKI	2	Lectures	1･2･3	English	ESd6612	Every	Fall	
QA30061	Advanced Aircraft Aerodynamic Design	MIYAJI KOJI	2	Lectures	1･2･3	English	ESd6611	Every	Spring	
QA30071	Advanced Ocean Resources and Energy Engineering	NISHI YOSHIKI	2	Lectures	1･2･3	English	ESd6612	Every	Spring	
QA30084	Advanced Theory in Dynamics of Floating Bodies Engineering	MURAI MOTOHIKO	2	Lectures	1･2･3	English	ESd6612	Every	Fall	
QA30094	Advanced Aerospace Utilization Engineering	HIGUCHI TAKEHIRO	2	Lectures	1･2･3	English	ESd6611	Every	Fall	
QA30104	Advanced Engineering Turbulence	YOUHEI TAKAGI	2	Lectures	1･2･3	English	ESd6612	Every	Fall	
QA30114	Advanced Maritime Traffic Safety	FUKUTO JUNJI , et.al.	2	Lectures	1･2･3	English	ESd6612	Every	Fall	
QA30121	Advanced Engineering for Ocean Development	KATO SHUNJI	2	Lectures	1･2･3	English	ESd6612	Every	Spring	
QA30131	Advanced Systems Engineering Theory of Ship Design	Taiga Mitsuyuki	2	Lectures	1・2・3	English	ESd6612	Every	Spring	
(S) QA39811 (F) QA39814	International Internship in Ocean and Space System Engineering	Each Instructor of Systems Design for Ocean-Space , et.al.	1	Exercise	1･2･3	English	ESd6034	Every	Spring･Fall	

Chemistry and Life Science

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(1) Innovation and Instrumentation engineering for Life Science	TAKEDA MINORU	QB25101	Engineering in Biology, Medicine and Bioanalytical Chemistry, Practice S	OKAZAKI SHINJI , et.al.	4	Exercise	1・2・3	Japanese	ESi6048	Every	Spring	
		QB25204	Engineering in Biology, Medicine and Bioanalytical Chemistry, Practice F	OKAZAKI SHINJI , et.al.	4	Exercise	1・2・3	Japanese	ESi6048	Every	Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QB10134	Astrobiology Special Lecture	KEBUKAWA YOKO	2	Lectures	1・2・3	English	ESh6507	Even	Fall	
QB10144	Functional Structural Biology	CHOJIRO KOJIMA	2	Lectures	1・2・3	English	ESh6672	Odd	Fall	
QB10174	Advanced Structural Life Science	KAWAMURA IZURU	2	Lectures	1・2・3	English	ESh6496	Even	Fall	
QB20014	Industrial materials and materials chemistry	OKAZAKI SHINJI	2	Lectures	1・2・3	English	ESh6594	Every	Fall	
QB20021	Electrochemical Materials	MATSUZAWA KOICHI	2	Lectures	1・2・3	English	ESh6531	Odd	Spring	
QB20034	Advanced Energy Chemistry	MITSUSHIMA SHIGENORI , et.al.	2	Lectures	1・2・3	English	ESh6537	Even	Fall	
QB20044	Materials for Energy Machines	TAKAHASHI KOJI	2	Lectures	1・2・3	English	ESh6551	Even	Fall	
QB20051	Energy Value Chain System	MUGIKURA YOSHIHIRO	2	Lectures	1・2・3	Japanese	ESh6537	Odd	Spring	
QB20061	Energy Conversion Technology	MORITA HIROSHI	2	Lectures	1・2・3	Japanese	ESh6602	Odd	Spring	
QB20074	Material Science for Energy applications	YAMAMOTO TOHRU	2	Lectures	1・2・3	Japanese	ESh6537	Odd	Fall	
QB20081	Environmental Energy Engineering	OKUYAMA KUNITO	2	Lectures	1・2・3	English	ESh6555	Odd	Spring	
QB20091	Reactor and Process Design	HABUKA HITOSHI	2	Lectures	1・2・3	English	ESh6602	Odd	Spring	
QB20101	Chemical Energy Engineering	AIHARA MASAHIKO	2	Lectures	1・2・3	English	ESh6616	Every	Spring	
QB20114	Separation Engineering Excerptus	NAKAMURA KAZUHO	2	Lectures	1・2・3	English	ESh6601	Odd	Fall	
QB20121	Biopolymer Engineering	TAKEDA MINORU	2	Lectures	1・2・3	English	ESh6714	Even	Spring	
QB20134	Advanced Medical Engineering	FUKUDA JUNJI , et.al.	2	Lectures	1・2・3	English	ESh6231	Odd	Fall	
QB20141	Chemical Reactions in the Environment	YOSHITAKE HIDEAKI	2	Lectures	1・2・3	English	ESh6536	Odd	Spring	
QB20154	Biology of Phenome	KURIHARA YASUYUKI	2	Lectures	1・2・3	English	ESh6671	Every	Fall	
QB20164	Advanced Devlopmental Engineering	SUZUKI ATSUSHI	2	Lectures	1・2・3	English	ESh6676	Every	Fall	
QB20174	Advanced Functional Materials Science	KANAI TOSHIMITSU	2	Lectures	1・2・3	English	ESh6593	Odd	Fall	
QB20181	Special Lecture in Tissue Engineering and Regenerative Medicine	FUKUDA JUNJI	2	Lectures	1・2・3	English	ESh6604	Odd	Spring	
QB20194	Advanced Studies of Mixing for Chemical Engineering	MISUMI RYUTA	2	Lectures	1・2・3	English	ESi6601	Every	Fall	
QB20204	Advanced Biochemical Engineering	NITTAMI TADASHI	2	Lectures	1・2・3	English	ESi6604	Odd	Fall	
(S) QB29821 (F) QB29824	PED International Internship in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	1	Exercise	1・2・3	Japanese	ESh6048	Every	Spring・Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(2) Innovative Chemical Process	HABUKA HITOSHI	QB25301	Innovative Chemical Process Engineering Studio S	OKUYAMA KUNITO , et.al.	4	Exercise	1･2･3	Japanese	ESi6048	Every	Spring	
		QB25404	Innovative Chemical Process Engineering Studio F	OKUYAMA KUNITO , et.al.	4	Exercise	1･2･3	Japanese	ESi6048	Every	Fall	
(3) Advanced Energy Creation	MITSUSHIMA SHIGENORI	QB25501	Exercise in Advanced Energy Creation S	OKAZAKI SHINJI , et.al.	4	Exercise	1･2･3	Japanese	ESi6048	Every	Spring	
		QB25604	Exercise in Advanced Energy Creation F	OKAZAKI SHINJI , et.al.	4	Exercise	1･2･3	Japanese	ESi6048	Every	Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QB20014	Industrial materials and materials chemistry	OKAZAKI SHINJI	2	Lectures	1･2･3	English	ESh6594	Every	Fall	
QB20021	Electrochemical Materials	MATSUZAWA KOICHI	2	Lectures	1･2･3	English	ESh6531	Odd	Spring	
QB20034	Advanced Energy Chemistry	MITSUSHIMA SHIGENORI , et.al.	2	Lectures	1･2･3	English	ESh6537	Even	Fall	
QB20044	Materials for Energy Machines	TAKAHASHI KOJI	2	Lectures	1･2･3	English	ESh6551	Even	Fall	
QB20051	Energy Value Chain System	MUGIKURA YOSHIHIRO	2	Lectures	1･2･3	Japanese	ESh6537	Odd	Spring	
QB20061	Energy Conversion Technology	MORITA HIROSHI	2	Lectures	1･2･3	Japanese	ESh6602	Odd	Spring	
QB20074	Material Science for Energy applications	YAMAMOTO TOHRU	2	Lectures	1･2･3	Japanese	ESh6537	Odd	Fall	
QB20081	Environmental Energy Engineering	OKUYAMA KUNITO	2	Lectures	1･2･3	English	ESh6555	Odd	Spring	
QB20091	Reactor and Process Design	HABUKA HITOSHI	2	Lectures	1･2･3	English	ESh6602	Odd	Spring	
QB20101	Chemical Energy Engineering	AIHARA MASAHIKO	2	Lectures	1･2･3	English	ESh6616	Every	Spring	
QB20114	Separation Engineering Excerptus	NAKAMURA KAZUHO	2	Lectures	1･2･3	English	ESh6601	Odd	Fall	
QB20121	Biopolymer Engineering	TAKEDA MINORU	2	Lectures	1･2･3	English	ESh6714	Even	Spring	
QB20134	Advanced Medical Engineering	FUKUDA JUNJI , et.al.	2	Lectures	1･2･3	English	ESh6231	Odd	Fall	
QB20141	Chemical Reactions in the Environment	YOSHITAKE HIDEAKI	2	Lectures	1･2･3	English	ESh6536	Odd	Spring	
QB20154	Biology of Phenome	KURIHARA YASUYUKI	2	Lectures	1･2･3	English	ESh6671	Every	Fall	
QB20164	Advanced Devlopmental Engineering	SUZUKI ATSUSHI	2	Lectures	1･2･3	English	ESh6676	Every	Fall	
QB20174	Advanced Functional Materials Science	KANAI TOSHIMITSU	2	Lectures	1･2･3	English	ESh6593	Odd	Fall	
QB20181	Special Lecture in Tissue Engineering and Regenerative Medicine	FUKUDA JUNJI	2	Lectures	1･2･3	English	ESh6604	Odd	Spring	
QB20194	Advanced Studies of Mixing for Chemical Engineering	MISUMI RYUTA	2	Lectures	1･2･3	English	ESi6601	Every	Fall	
(S) QB29821 (F) QB29824	PED International Internship in Chemistry Applications and Life Science	Each Instructor of Chemistry Applications and Life Science , et.al.	1	Exercise	1･2･3	Japanese	ESh6048	Every	Spring･Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(4) Electronics Mounting Engineering	HABUKA HITOSHI	QB25701	Electronics JISSO Studio S	HABUKA HITOSHI , et.al.	4	Exercise	1・2・3	Japanese	ESi6048	Every	Spring	
		QB25804	Electronics JISSO Studio F	HABUKA HITOSHI , et.al.	4	Exercise	1・2・3	Japanese	ESi6048	Every	Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QA10101	Non-linear Structural Simulation	YU QIANG	2	Lectures	1・2	English	ESd6551	Odd	Spring	
QB10061	Chemistry of Functional Polymers	OYAMA TOSHIYUKI	2	Lectures	1・2・3	English	ESh6533	Odd	Spring	
QB20044	Materials for Energy Machines	TAKAHASHI KOJI	2	Lectures	1・2・3	English	ESh6551	Even	Fall	
QB20081	Environmental Energy Engineering	OKUYAMA KUNITO	2	Lectures	1・2・3	English	ESh6555	Odd	Spring	
QB20091	Reactor and Process Design	HABUKA HITOSHI	2	Lectures	1・2・3	English	ESh6602	Odd	Spring	
QB20141	Chemical Reactions in the Environment	YOSHITAKE HIDEAKI	2	Lectures	1・2・3	English	ESh6536	Odd	Spring	
QC30174	Advanced Semiconductor Devices	HANEJI NOBUO	2	Lectures	1・2・3	Japanese	ESl6563	Even	Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(1) System Design	HAMAGAMI TOMOKI	QC35101	Practical System Design	HAMAGAMI TOMOKI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	Consult with your supervisor about the course year
		QC35104	Practical System Design	HAMAGAMI TOMOKI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QC30024	Advanced Antennas and Propagation Engineering II	ARAI HIROYUKI	2	Lectures	1・2・3	English	ESl6564	Even	Fall	
QC30031	Special Issues On Open Source Study	SUGIMOTO CHIKA	2	Lectures	1・2・3	English	ESl6112	Even	Spring	
QC30054	Advanced Digital Circuit Theory	ICHIGE KOICHI	2	Lectures	1・2・3	English	ESl6565	Even	Fall	
QC30071	Advanced Microwave Engineering	KUGA NOBUHIRO	2	Lectures	1・2・3	English	ESl6564	Odd	Spring	
QC30084	Advanced Multimedia Mobile Communication Networks	HIROYUKI TSUJI	2	Lectures	1・2・3	Japanese	ESl6564	Even	Fall	
QC30121	Advanced Topics of Information Theory	KOHNO RYUJI	2	Lectures	1・2・3	English	ESl6564	Every	Spring	
QC30131	Advanced Intelligent Systems	HAMAGAMI TOMOKI	2	Lectures	1・2・3	English	ESl6124	Even	Spring	
QC30181	Advanced Coding Theory	OCHIAI HIDEKI	2	Lectures	1・2・3	English	ESl6564	Odd	Spring	
QC30214	Advanced Biomedical System Engineering	SHIMA KEISUKE	2	Lectures	1・2・3	English	ESl6234	Odd	Fall	
QC30444	Evolutionary Intelligence	NAKATA MASAYA	2	Lectures	1・2・3	English	ESl6125	Even	Fall	
(S) QC39831 (F) QC39834	International Internships in Electrical and Computer Engineering	Each Instructor of Electrical and Computer Engineering , et.al.	1	Exercise	1・2・3	English	ESl6054	Every	Spring・Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(2) System Device	HANEJI NOBUO	QC35201	System Device Studio	HANEJI NOBUO , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	Consult with your supervisor about the course year
		QC35204	System Device Studio	HANEJI NOBUO , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QC30064	Advanced Data Storage	TAKEMURA YASUSHI	2	Lectures	1・2・3	English	ESl6563	Every	Fall	
QC30104	Advanced Quantum Optoelectronics	BABA TOSHIHIKO	2	Lectures	1・2・3	English	ESl6444	Every	Fall	
QC30114	Advanced Integrated Nanodevices	OYA TAKAHIDE	2	Lectures	1・2・3	English	ESl6436	Odd	Fall	
QC30141	Advanced Superconductivity Electronics	YOSHIKAWA NOBUYUKI	2	Lectures	1・2・3	Japanese	ESl6563	Every	Spring	
QC30174	Advanced Semiconductor Devices	HANEJI NOBUO	2	Lectures	1・2・3	Japanese	ESl6563	Even	Fall	
QC30194	Seminar in Quantum Effect Devices	ARAKAWA TARO	2	Lectures	1・2・3	English	ESl6444	Every	Fall	
QC30201	Advanced Integrated Quantum Devices	YAMANASHI YUKI	2	Lectures	1・2・3	English	ESl6563	Odd	Spring	
QC30221	Advanced in Nanophotonics	NISHIJIMA YOSHIAKI	2	Lectures	1・2・3	English	ESl6432	Every	Spring	
QC30414	Advanced Spintronics	SEKIGUCHI KOJI	2	Lectures	1・2・3	English	ESl6563	Every	Fall	
(S) QC39831 (F) QC39834	International Internships in Electrical and Computer Engineering	Each Instructor of Electrical and Computer Engineering , et.al.	1	Exercise	1・2・3	English	ESl6054	Every	Spring・Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(3) Energy and Control	FUJIMOTO YASUTAKA	QC35301	Energy and Control Practice	FUJIMOTO YASUTAKA , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	Consult with your supervisor about the course year
		QC35304	Energy and Control Practice	FUJIMOTO YASUTAKA , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QC30041	Advanced Theory of Systems, Control and Information	FUJIMOTO YASUTAKA	2	Lectures	1・2・3	English	ESl6566	Odd	Spring	
QC30094	Advanced Mechatronics	SHIMONO TOMOYUKI	2	Lectures	1・2・3	English	ESl6561	Odd	Fall	
QC30151	Advanced Power System Engineering	OYAMA TSUTOMU	2	Lectures	1・2・3	English	ESl6561	Even	Spring	
QC30431	Advanced Electrical-Mechanical Energy Conversion	AKATSU KAN	2	Lectures	1・2・3	English	ESl6561	Even	Spring	
QC30164	Advanced Technology in Power System Protection and Control	TSUJI TAKAO	2	Lectures	1・2・3	English	ESl6561	Every	Fall	
(S) QC39831 (F) QC39834	International Internships in Electrical and Computer Engineering	Each Instructor of Electrical and Computer Engineering , et.al.	1	Exercise	1・2・3	English	ESl6054	Every	Spring・Fall	

Studio courses

Module Title	Module Manager's Name	Schedule code	Studio courses name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
(4) Medicine and Engineering Integration	KOHNO RYUJI	QC35401	Design and Development for Medical Information Systems	KOHNO RYUJI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	Consult with your supervisor about the course year
		QC35404	Design and Development for Medical Information Systems	KOHNO RYUJI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	
		QC35501	Design and Development of Devices for Advanced Medical Applications	KOHNO RYUJI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	
		QC35504	Design and Development of Devices for Advanced Medical Applications	KOHNO RYUJI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	
		QC35601	Design and Development of Mechatronics for Advanced Medical Applications	KOHNO RYUJI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	
		QC35604	Design and Development of Mechatronics for Advanced Medical Applications	KOHNO RYUJI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	
		QC35701	Studio of Design and Development for Medical-Biomedical Systems	KOHNO RYUJI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	
		QC35704	Studio of Design and Development for Medical-Biomedical Systems	KOHNO RYUJI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	
		QC35801	Studio of Development and Evolution of Innovative Medical-Engineering	KOHNO RYUJI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	
		QC35804	Studio of Development and Evolution of Innovative Medical-Engineering	KOHNO RYUJI , et.al.	4	Exercise	1・2・3	Japanese	ESm6058	Every	Spring・Fall	

Related Lecture courses that make up the module

Schedule code	Course name	Instructor	Credits	Style of class	Grade	Language of instruction	Numbering	Year	Semester	Remarks
QC30064	Advanced Data Storage	TAKEMURA YASUSHI	2	Lectures	1・2・3	English	ESl6563	Every	Fall	
QC30104	Advanced Quantum Optoelectronics	BABA TOSHIHIKO	2	Lectures	1・2・3	English	ESl6444	Every	Fall	
QC30131	Advanced Intelligent Systems	HAMAGAMI TOMOKI	2	Lectures	1・2・3	English	ESl6124	Even	Spring	
QC30141	Advanced Superconductivity Electronics	YOSHIKAWA NOBUYUKI	2	Lectures	1・2・3	Japanese	ESl6563	Every	Spring	
QC30421	Advanced Human Sensing Engineering	SUGIMOTO CHIKA	2	Lectures	1・2・3	English	ESl6122	Even	Spring	
(S) QC39831 (F) QC39834	International Internships in Electrical and Computer Engineering	Each Instructor of Electrical and Computer Engineering , et.al.	1	Exercise	1・2・3	English	ESl6054	Every	Spring・Fall	

Ⅶ Procedures Involving Student Affairs

Ⅶ-1 Leave Of Absence, Re-enrollement, Withdrawal, Application to Another University

1. Leave of Absence

1) If you wish to apply for a leave of absence due to an illness or for other reasons within the academic year, submit the application for a leave of absence (to be co-signed by a parent or another contact person) and obtain approval from the Principal in accordance to the criteria for the approval of leave of absence from YNU. **The application must be submitted at least 10 days before the intended leave begins.** (Contact the Graduate School of Engineering Science Section to receive the necessary application form.)
2) You may be required to take a leave of absence if your continued study is deemed undesirable due to an illness. (Article 50, University General Regulations)
3) If a leave of absence was approved but the cause for the leave is not resolved even after the approved period has expired, the student may apply for an extension. (Apply for the extension before the leave of absence expires by contacting the Graduate School of Engineering Science Section and obtaining the necessary application form.)
4) The period of leave of absence is not counted in the period of enrollment.
5) The period of leave cannot exceed two years for a master's program and three years for a doctoral program.

* Contact the Graduate School of Engineering Science Section as soon as you have decided to apply for a leave to discuss matters including the procedure related to tuition fee.

(Reference: Article 15, Regulations on Tuition Waiver and Postponement of Collection at Yokohama National University
http://somu-somu.ynu.ac.jp/gakugai/kisoku/act/frame/frame110000168.htm)

(Reference) Criteria for the approval of leave of absence from YNU

Article 1 Pursuant to Paragraph 4, Article 50 of the General Regulations of Yokohama National University (hereinafter "University General Regulations"), a leave of absence is approved if a person requires continued absence for at least three months for any of the reasons mentioned in the following items:

(1) Sickness or injury of the applicant (a medical certificate is required)
(2) Childbirth by the applicant or child-rearing of the applicant's child (including a legally adopted child) until the child reaches the age of three (a medical certificate for the child delivery, etc., is required)
(3) Financial difficulties (a written justification and documents to prove the fact is required)
(4) The applicant needs to temporarily help the family business due to the death of the head of the household or the like (a written justification and documents to prove the fact is required)
(5) The applicant needs to take care of a sick family member (a written justification and medical certificate to prove the sickness, or a written justification and a certificate to prove the need for long-term care are required)
(6) Work obligation (a certificate from the employer is required)
(7) Acknowledged educational benefit of studying at a foreign university, college, or graduate school (a document to prove the intended study at the host university, college, or graduate school, and a document describing the intended study are required)
(8) Other unavoidable reasons acknowledged by the faculty council (a document to prove the reason is required)

Article 2 The reason stipulated in Paragraph 2, Article 51 of the University General Regulation and in Paragraph 3, Article 22 of the YNU Graduate School General Regulations shall be limited to item 2 in the previous paragraph.

2. Re-enrollment

1) If the reason for a leave of absence is resolved during the approved period of leave, re-enrollment can be made by obtaining the approval of the Principal. (Contact the Graduate School of Engineering Science Section to obtain the necessary application form.)
2) Once re-enrolled, the student must pay tuition for the period of study as calculated on a monthly basis.

3. Withdrawal

1) If you wish to withdraw from the course, submit an application (to be co-signed by a parent or a contact person) along with a written justification and obtain approval from the Principal. The application must be submitted at least 10 days before the intended date of withdrawal. (Contact the Graduate School of Engineering Science Section to obtain the necessary application form.)
2) You still have to pay tuition for the semester even if you have withdrawn from the course.
3) The student ID must be returned when you withdraw.

4. Application to Another University

1) A student may submit an application to another university and take the entrance examination by obtaining the approval of the Dean of the Graduate School of Engineering Science. (Contact the Graduate School of Engineering Science Section to obtain the necessary application form.)
2) If you successfully pass the entrance examination to another university, immediately follow the steps to withdraw from our university.

Ⅶ-2 Various Notification

1. Procedure for Going Abroad

When students go to abroad ,whatever the purpose is , please submit ' Overseas Travel Notification' to Graduate School of Engineering Science Section in advance. The template can be downloaded from the website of YNU (http://www.ynu.ac.jp/english/international/voyage_info/security.html). Also follow the necessary procedure by referring to the same website. (http://www.ynu.ac.jp/english/international/voyage_info/security.html)

Make sure to start preparing well in advance as some steps may take time.

2. Notifications

Notification	Place of submission	Timing/Deadline	Remarks
Change of the student's address	Educational Affairs Division, Student Affairs and International Relations Department (second floor of the International Student Center)	After any change	
Change of domicile			
Change of surname or given name			Attach a copy of the family register
Change of address of parents, etc.			
Overtime research	Register through the Electronic Management System for Overtime Research (http://www.rms.ynu.ac.jp/)		Overtime research notification can be submitted instead of an application for borrowing a facility if research needs to be continued after 21:00, overnight, or during holidays.
Internship report	Graduate School of Engineering Science Section (Submit it as an attachment to an email.)	After the internship is over	The form is available on the website of the Graduate School of Engineering Science (http://www.fse.ynu.ac.jp/english/education/index.html).

Ⅶ-3 Issuance of Certificates

1. Issuance of Certificate while in YNU

(1) Certificates of enrollment (Japanese/English), transcripts (Japanese/English), certificates of expected completion (Japanese/English), student discount certificates for public transportation, and health certificates can be issued by automated certificate-issuing machines.

(2) Other certificates cannot be issued immediately. Check the necessary application form and place of submission, then go to the specified office to fill in and file the necessary application.

2. Issuance of Certificates after the Program Completion

Go to the YNU website(http://www.ynu.ac.jp/campaus/procedure/certificate.html) to learn how to apply for certificates.

If you have any questions, contact the Graduate School of Engineering Science Section by phone (+81-45-339-3817) or by email(ses.daigakuin-eng@ynu.ac.jp)

Ⅶ-4 Collection of Tuition and Delinquency

Tuition fees will be collected in accordance with the "Regulations on the Collection of Tuition Fees by Yokohama National University and Reminders to Delinquents" (http://somu-somu.ynu.ac.jp/gakugai/kisoku/act/frame/frame110000184.htm). Pay attention to the date of automatic withdrawal, etc.

Ⅷ　Activity Support System by Plurality of Teachers

Ⅷ－１　System of Support Teacher

Graduate School of Engineering Science sets each student a support teacher in addition to academic advisor to consult about your research activity or campus life at the school entrance. You can consult with the support teacher while your academic advisor is absent. If you would like to know your support teacher, please ask your academic advisor or academic affairs officer.