

**Handbook for students at Special Program for  
“Engineering Science 21<sup>st</sup> Century”  
Academic year 2020**

April 2020

The Graduate School of Engineering Science, Osaka University



## Academic Calendar 2020-2021

**Spring Summer Semester 2020 (From April 1 to September 30)**

**Spring Term 2020 (From April 1 to June 10)**

**Summer Term 2020 (From June 11 to September 30)**

Month	Day		Events
April	2	Thu	Entrance ceremony (Osaka-Jo Hall) <b>[Cancelled]</b>
	9	Thu	Spring Term classes start (until June 10) Spring Summer Semester classes start (until September 30)
	middle - Apr.		Medical Checkup at Health Care Center, Toyonaka Office
	22	Wed	Deadline of the course registration for Spring Term, Spring Summer Semester (from April 1)
	30	Thu	Wednesday's classes are held, although it is Thursday.
May	1	Fri	All classes are cancelled for University Festival (Icho Festival)
	27	Wed	Deadline of payment of tuition fees of Spring Summer Semester
June	4	Thu	Examination of Spring Term starts (until June 10)
	11	Thu	Summer Term and classes start (until September 30)
	17	Wed	Deadline of the course registration for Summer Term (from June 11)
July	27	Mon	Examination of Spring Summer Semester starts (until August 7)
August	3	Mon	Examination of Summer Term starts (until August 7)
	11	Tue	Summer Holidays starts (until September 30)

**Autumn Winter Semester 2020 (From October 1 to March 31)**

**Autumn Term 2020 (From October 1 to December 1)**

**Winter Term 2020 (From December 2 to March 31)**

Month	Day		Events
October	1	Thu	Autumn Term and classes starts (until December 1) Autumn Winter Semester and classes start (until March 31)
	14	Wed	Deadline of the course registration for Autumn Term, Autumn Winter Semester (from September 24)
November	early-Nov.		Medical Checkup for new students who enrolled in October
	19, 20	Thu, Fri	All classes are cancelled for University Festival.
	25	Wed	Examination of Autumn Term starts (until December 1)
	27	Fri	Deadline of payments of tuition fees of Autumn Winter Semester
December	2	Wed	Winter Term and classes start (until March 31)
	8	Tue	Deadline of the course registration for Winter Term (from December 2)
	28	Mon	Winter Holidays starts (until January 3)
January	15	Fri	Classes are cancelled for entrance examinations to the undergraduate course
	20	Wed	Examination of Autumn Winter Semester starts. (January 20, 21, 26 to 29, February 1, 2, 4, 5)
	27	Wed	Examination of Winter Term starts. (January 27, 28, February 2, 4, 5)
February	4	Thu	Monday's classes or exam are held, although it is Thursday
	8	Mon	Spring Holidays starts (until the new semester starts)

Class Time Schedule:

1st: 8:50~10:20    2nd: 10:30~12:00  
 3rd: 13:00~14:30    4th: 14:40~16:10  
 5th: 16:20~17:50    6th: 18:00~19:30



# Lecture Schedule for Spring Summer Semester 2020

The Graduate School of Engineering Science

April 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
/	/	/	1	2 <small>Entrance ceremony</small>	3	4
5	6	7	8	9 ①●	10 ①●	11
12	13 ①●	14 ①●	15 ①●	16 ②●	17 ②●	18
19	20 ②●	21 ②●	22 ②●	23 ③●	24 ③●	25
26	27 ③●	28 ③●	29	*1 30 ③●	/	/

July

Sun	Mon	Tue	Wed	Thu	Fri	Sat
/	/	/	1 ③●	2 ④●	3 ④●	4
5	6 ④●	7 ④●	8 ④●	9 ⑤●	10 ⑤●	11
12	13 ⑤●	14 ⑤●	15 ⑤●	16 ⑥●	17 ⑥●	18
19	20 ⑥●	21 ⑥●	22 ⑥●	23	24	25
26	27 ⑦●	28 ⑦●	29 ⑦●	30 ⑦●	31 ⑦●	/

May

Sun	Mon	Tue	Wed	Thu	Fri	Sat
/	/	/	/	/	1 Icho Festival	2 Icho Festival
3 Icho Festival	4	5	6	7 ④●	8 ④●	9
10	11 ④●	12 ④●	13 ④●	14 ⑤●	15 ⑤●	16
17	18 ⑤●	19 ⑤●	20 ⑤●	21 ⑥●	22 ⑥●	23
24	25 ⑥●	26 ⑥●	27 ⑥●	28 ⑦●	29 ⑦●	30
31	/	/	/	/	/	/

August

Sun	Mon	Tue	Wed	Thu	Fri	Sat
/	/	/	/	/	/	1
2	3 ⑧●	4 ⑧●	5 ⑧●	6 ⑧●	7 ⑧●	8
9	10	11	12 ←Summer Closure→	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	/	/	/	/	/

June

Sun	Mon	Tue	Wed	Thu	Fri	Sat
/	1 ⑦●	2 ⑦●	3 ⑦●	4 ⑧●	5 ⑧●	6
7	8 ⑧●	9 ⑧●	10 ⑧●	11 ①●	12 ①●	13
14	15 ①●	16 ①●	17 ①●	18 ②●	19 ②●	20
21	22 ②●	23 ②●	24 ②●	25 ③●	26 ③●	27
28	29 ③●	30 ③●	/	/	/	/

September

Sun	Mon	Tue	Wed	Thu	Fri	Sat
/	/	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	/	/	/

Class Time Schedule: 1st 8:50~10:20      2nd 10:30~12:00      3rd 13:00~14:30  
4th 14:40~16:10      5th 16:20~17:50      6th 18:00~19:30

Spring Term      April 9 to June 10

Summer Term      June 11 to September 30

Spring Summer Semester April 9 to September 30

  : Saturday, Sunday, National holidays and other designated holidays

○Numbers in black: term classes

●Numbers in white: semester classes

\*1 : Wednesday class make-up on ③&③

  : Exams during ⑧ for term classes, for semester classes during ⑮ or ⑯

# Lecture Schedule for Autumn Winter Semester 2020

The Graduate School of Engineering Science

October

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 ①●	2 ①●	3
4	5 ①●	6 ①●	7 ①●	8 ②●	9 ②●	10
11	12 ②●	13 ②●	14 ②●	15 ③●	16 ③●	17
18	19 ③●	20 ③●	21 ③●	22 ④●	23 ④●	24
25	26 ④●	27 ④●	28 ④●	29 ⑤●	30 ⑤●	31

January 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4 ④●	5 ④●	6 ⑤●	7 ⑥●	8 ⑤●	9
10	11	12 ⑤●	13 ⑥●	14 ⑥●	15	16
17	18 ⑤●	19 ⑥●	20 ⑦●	21 ⑦●	22 ⑥●	23
24	25 ⑥●	26 ⑦●	27 ⑧●	28 ⑧●	29 ⑦●	30
31						

November

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2 ⑤●	3	4 ⑤●	5 ⑥●	6 ⑤●	7
8	9 ⑥●	10 ⑤●	11 ⑥●	12 ⑦●	13 ⑦●	14
15	16 ⑦●	17 ⑥●	18 ⑦●	19 Machikane Festival	20	21
22 Machikane Festival	23	24 ⑦●	25 ⑧●	26 ⑧●	27 ⑧●	28
29	30 ⑧●					

February

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 ⑦●	2 ⑧●	3	*1 4 ⑧●	5 ⑧●	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25 Office Close	26	27
28						

December

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 ⑧●	2 ①●	3 ①●	4 ①●	5
6	7 ①●	8 ①●	9 ②●	10 ②●	11 ②●	12
13	14 ②●	15 ②●	16 ③●	17 ③●	18 ③●	19
20	21 ③●	22 ③●	23 ④●	24 ④●	25 ④●	26
27	28	29	30	31		

March


Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Class Time Schedule: 1st 8:50~10:20      2nd 10:30~12:00      3rd 13:00~14:30  
4th 14:40~16:10      5th 16:20~17:50      6th 18:00~19:30

Autumn Term      October 1 to December 1

Winter Term      December 2 to March 31


Autumn Winter Semester October 1 to March 31

 : Saturday, Sunday, National holidays and other designated holidays

○Numbers in black: term classes

●Numbers in white: semester classes

\*1 : Monday class make-up on ⑧&⑩

 : Exams during ⑧ for term classes, for semester classes during ⑮ or ⑯

Below is a translation from the original and shall not be regarded as official documentation. The English text has been provided merely as a reference. Please note that any official rules are based solely on the Japanese text.

## Regulations of the Graduate School of Engineering Science, Osaka University

### Intent and Purpose

#### Article 1

1. The Regulations of the Graduate School of Engineering Science specify rules and regulations necessary for the Graduate School of Engineering Science, Osaka University (hereinafter referred to as the “Graduate School”) under the Osaka University Graduate School Regulations and Osaka University Degree Regulations.
2. The principle of education and research of the Graduate School is “fundamentally developing scientific technology by a fusion of science and engineering will create the true culture of humanity.” Under the principle, the Graduate School aims to develop new academic fields in response to the needs of society, and between science and engineering, to nurture students to become the following kind of specialist through our advanced graduate education well-balanced between science and engineering:
  - i) researchers and engineers with specializations enabling them to conduct research and development, ranging from the basic to the highly specialized;
  - ii) scientists and researchers who develop new interdisciplinary fields with advanced expertise and wide-ranging knowledge; and
  - iii) global leaders who have the competency to proceed with research and development independently.

### Course

#### Article 2

1. The course of the Graduate School shall be a doctoral course.
2. The doctoral course shall be divided into the following two phases: a two-year master’s course (hereinafter referred to as the “Master’s Course”) and a three-year doctoral course (hereinafter referred to as the “Doctoral Course”).
3. The Osaka University Honors Program for the Graduate Schools in Science, Engineering and Informatics (hereto referred to as the “Honors Program”) is provided for Doctoral Course students.

### Departments

#### Article 3

1. The Graduate School provides the following Departments:
  - Department of Materials Engineering Science;
  - Department of Mechanical Science and Bioengineering; and
  - Department of Systems Innovation
2. Each Department provides the following Divisions respectively:

Department	Division
Materials Engineering Science	Materials Physics, Chemistry, Chemical Engineering, Frontier Materials Science
Mechanical Science and Bioengineering	Nonlinear Mechanics, Mechanical Engineering, Bioengineering
Systems Innovation	Advanced Electronics and Optical Science, Systems Science and Applied Informatics, Mathematical Science, Mathematical Science for Social Systems

### Lecture and Research Supervision

#### Article 4

1. Education at the Graduate School will be provided through both lectures on subjects and supervising the writing of a thesis or dissertation (hereinafter referred to as the “Research Supervision”).
2. The subjects and number of credits for each Division of the respective Departments will be as indicated in the respective Tables.
3. The provisions of Article 13 of the Regulations of the School of Engineering Science of Osaka University will apply *mutatis mutandis* to calculation of credits for each subject in the Graduate School.

## **Academic Supervisor**

### Article 5

1. An academic supervisor will be allocated to each student.
2. The academic supervisor will be a Professor of each Department; provided that this may be substituted with an Associate Professor or an Associate Professor (lecturer) as may be approved after the Faculty Meeting of the Graduate School of Engineering Science (hereinafter referred to as the "Faculty Meeting"), when deemed necessary by the Dean of the Graduate School.

## **Registration Procedure for Master's Course**

### Article 6.1

1. The Master's Course students are required to complete at least thirty (30) credits from the subjects (including the compulsory subjects) involved for the relevant Division as listed in Table 1, in accordance with instructions given by their respective academic supervisor.
2. Notwithstanding the provision of the preceding Clause, students who received an offer for admission as those who only register the subjects to be taught in English are required to complete at least thirty (30) credits from the subjects (including the compulsory subjects) involved for the relevant Division as listed in Table 2, in accordance with instructions given by their respective academic supervisor. Provided, when the academic supervisor acknowledges the necessity, students may take the subjects of the respective division listed in Table 1 and obtain credits upon receiving approval by the Faculty Meeting.
3. Master's Course students who will be taking subjects in the Honors Program must adhere to the guidance of his/her academic supervisor and are required to complete at least thirty (30) credits from the list of subjects for the relevant Division found in Table 1 as well as subjects to be specified separately of the relevant division according to the separately specified course registration method despite what is stipulated in 6.1 and 6.2.
4. With regard to the preceding Clause, those who have been admitted as a student for the Special Program "Engineering Science 21st Century" must adhere to the guidance of his/her academic supervisor and are required to complete at least thirty (30) credits including twelve (12) credits for compulsory subjects from the list of subjects for the relevant Division found in Table 2 as well as subjects to be specified separately according to the separately specified course registration method. Provided, when the academic supervisor acknowledges the necessity, students may take the subjects of the respective Division listed in Table 1 and obtain credits upon receiving approval by the Faculty Meeting.
5. In addition to what is stated in 6.3 and 6.4, necessary information regarding course registration for the Honors Program is stipulated separately.
6. The Master's Course students are required to receive Research Supervision as stipulated by each Department; provided that the academic supervisor requires any of the students to receive further Research Supervision from graduate schools of other universities or institutions equivalent to those for educational purposes, this will be made possible with the approval of the Faculty Meeting.
7. The Research Supervision specified in the provision to the preceding Clause may not exceed a period of more than one (1) year.
8. The academic supervisor may, to the extent it deems necessary, require any of the students to register any of the Graduate Transdisciplinary Subjects or the Leading Program Subjects, and the credits obtained therefrom may be allocated to those specified in Clause 1 to 4 as applicable, with the approval of the Faculty Meeting.
9. The academic supervisor may, to the extent it deems necessary, require any of the students to register any of the subjects for any other Division of the relevant Department of the Graduate School, subjects for any other Department or graduate school of the University, undergraduate subjects for the School of Engineering Science or any other school of the University, or graduate subjects offered by other universities including overseas universities, and the credits obtained therefrom may be allocated to those specified in Clause 1 to 4 as applicable, with the approval of the Faculty Meeting.
10. The credits which may be allocated pursuant to the provision of the preceding Clause is limited to a maximum of ten (10) credits, if such credits are obtained from graduate subjects in other universities including overseas universities.
11. In addition to the credits specified in the preceding Clause, if the academic supervisor deems necessary, any credit for subjects which students may have completed in a graduate school prior to their admission to the Graduate School (including any credits which are completed as a credited auditor defined in Article 15 of the Standards for Establishment of Graduate Schools (Ordinance of the Ministry of Education No. 28 of 1974)) may, with the approval of the Faculty Meeting, be allocated to those specified in Clause 1 to 4 as applicable, up to ten (10) credits, as if such credits had been completed in the Graduate School.



### **Long-term Completion of Master's Course**

#### Article 6.2

1. The Dean of the Graduate School may accept any application for well-planned extended registration made by any Master's Course student who wishes to register for a curriculum for a period of more than two (2) years for completion thereof, with a reasonable reason such as working part-time.
2. Any other matters necessary for the students who are permitted to register in a well-planned manner for an extended period pursuant to the provision of the preceding Clause will be set out separately.

### **Registration Procedure for Doctoral Course**

#### Article 7.1

1. The Doctoral Course students are required to complete at least twelve (12) credits from the subjects (including the compulsory subjects) involved for the relevant Division as listed in the Table 3.
2. Doctoral Course students who will be taking subjects in the Honors Program are required to complete twelve (12) credits from the list of subjects including compulsory subjects found in Table 3 as well as subjects to be specified separately according to the separately specified course registration method despite what is stipulated in the preceding Clause.
3. In addition to what is stated in the preceding Clause, necessary information regarding course registration for the Honors Program is stipulated separately.
4. The Doctoral Course students are required to receive Research Supervision as stipulated by each Division; provided that the academic supervisor requires any of the students to receive further Research Supervision from graduate schools of other universities or institutions equivalent to those for educational purposes, this will be made possible with the approval of the Faculty Meeting.
5. The academic supervisor may, to the extent it deems necessary, require any of the students to register any of the subjects of the Graduate School, the Graduate Transdisciplinary Subjects, subjects for any other graduate school of the University, undergraduate subjects for the School of Engineering Science or any other school of the University, or graduate subjects offered by other universities including overseas universities.

### **Long-term Completion of Doctoral Course**

#### Article 7.2

1. The Dean of the Graduate School may accept any application for well-planned extended registration made by any Doctoral Course student who wishes to register for a curriculum for a period of more than three (3) years for completion thereof, with a reasonable reason such as working part-time.
2. Any other matters necessary for the students who are permitted to register in a well-planned manner for an extended period pursuant to the provision of the preceding Clause will be set out separately.

### **Registration Plan**

#### Article 8

Students are required to submit a Course Registration Plan indicating their proposed subjects and any other issues necessary in such form and by such date as designated, in accordance with instructions given by the academic supervisor.

### **Examination in Registered Subject**

#### Article 9

Examinations in registered subjects will be conducted in writing, orally or by research paper.

### **Recognition of Completion**

#### Article 10

1. Certain credits will be awarded for the subjects of which a student passed the examination pursuant to the provision of the preceding Article.
2. In principle, any recognition of result for Research Supervision will be given by the academic supervisor at the end of each academic year; provided that such recognition may be given at any other time, if necessary for a special reason.

## **Master's/Doctoral Thesis and Final Examination**

### Article 11

1. Students are required to submit a Master's or Doctoral thesis as applicable, by the due date for the assessment, and to take a final examination.
2. The final examination will be conducted in writing or orally mainly for the assessed Master's or Doctoral thesis, and for thesis-related subjects.
3. Pass /fail assessment of the Master's or Doctoral thesis and the final examination will be determined by the Faculty Meeting based on reports from the Dissertation Committee.
4. The assessment of the Master's thesis may be substituted with assessment of findings of a specific research study, if the Dean of the Graduate School deems appropriate with the approval of the Faculty Meeting.

## **Special Research Student, Special Auditor and Credited Auditor**

### Article 12

1. Any of the following applicants may submit an application to the Dean of the Graduate School in accordance with the applicable procedure:
  - i) a graduate student of another university who wishes to receive Research Supervision at the Graduate School;
  - ii) a graduate student of another university including overseas universities who wishes to take any subject at the Graduate School;or
  - iii) a working adult who wishes to take subjects in the Graduate School.
2. Any application from the applicants specified in the preceding Clause may be accepted with the approval of the Dean of the Graduate School, subject to assessment, as a special research student, if the applicant falls into paragraph i) above, as a special auditor if the applicant falls into paragraph ii) above, or as a credited auditor if the applicant falls into paragraph iii) above, as applicable.
3. The subjects that special auditors may take are as listed in Table 1; provided that foreign students shall select subjects from Table 1 and others that are approved by the graduate school.
4. The subjects that credited auditors may take are as listed in Table 1; provided that Table 4 will apply to credited auditors who take the Advanced Inter-/Multi-disciplinary Graduate-level Programs for Education, Research and Training in Nanoscience and Nanotechnology (Continuing Education Program).

### Article 13

1. In principle, special research students may stay for one (1) year; provided that the students may extend such period of time each year by submitting the appropriate document, if necessary.
2. Special auditors and credited auditors may stay for a period of time during which the relevant subject is offered; provided that any special auditor or credited auditor may extend such period of time, if the Dean of the Graduate School accepts an application for extension submitted by such auditor to the Dean.
3. The provisions of Articles 9 and 10.1 will apply *mutatis mutandis* to examination in registered subjects and recognition of completion for special auditors and credited auditors.

## **Research Student**

### Article 14

1. The Dean of the Graduate School may accept an application for admission as a research student which is made by an applicant who wishes to pursue a specific theme at the Graduate School, subject to assessment by the Faculty Meeting.
2. Each applicant for admission as a research student is required to satisfy one of the following admission criteria:
  - i) hold a Master's degree; or
  - ii) be deemed as having met academic standards equivalent to a Master's degree.
3. Research students are required to enroll at the beginning of any of the semesters; provided that research students may enroll at any other time, if necessary for special reasons.
4. An academic supervisor will be allocated to each research student.
5. Research students may stay for up to one (1) year; provided that such period of time may be extended, if it is deemed necessary by the Dean of the Graduate School with the approval of the Faculty Meeting for research purposes.
6. In case any research student intends to withdraw from the Graduate School, an appropriate document must be submitted to the Dean of the Graduate School through his/her academic supervisor.

**Removal of Special Research Student, Special Auditor, Credited Auditor and Research Student**

Article 15

The Dean of the Graduate School is entitled to remove from registration any student or auditor who is deemed inappropriate as a special research student, special auditor, credited auditor or research student, after discussion by the Faculty Meeting.

**Other Matters**

Article 16

Any other necessary matters not stipulated herein will be determined by the Dean of the Graduate School with the approval of the Faculty Meeting.



# 1. Special Program of “Engineering Science 21<sup>st</sup> Century”

## Contents of Study

The Graduate School of Engineering Science aims to acquire a strong international reputation through increased exchange of students and researchers, and in joint research projects. For this objective, the Graduate School of Engineering Science has decided to offer a new interdisciplinary program in which all lectures, as well as all instructions and supervision in research-related activities and seminars, are given in English. The students are not required to learn Japanese to join this program. In this program, globally recognized and highly qualified graduates are expected to be educated under the guiding principles of the Graduate School of Engineering Science which strives to integrate science and technology.

## Outline and Features of the Program

1. The aim of this program is to develop human resources with high level, creative and flexible problem-solving ability. This is achieved through multi- and interdisciplinary research training, seminars, and lectures, given by prominent professors in their respective fields.
2. Students are guided and supervised in English.
3. **The Master’s Course students** are required to complete at least thirty (30) credits from the subjects (including the compulsory subjects) as given in **Table 1**. The list of courses given in English is shown in **Table 2**. Course codes of compulsory courses (Seminar and Research I-IV) are shown in **Table 3**. Provided, if the student wishes to take subjects offered in the general course and wish to apply the credits for completion, he or she may do so based on the regulations set separately. Contact the Graduate Students Section for details.  
**Doctoral Course students** are required to obtain twelve (12) credits in “Advanced/Special Research I to VI” for each division as shown in **Table 4** as well as to take “Research Training for Doctor’s Thesis” with no credit.
4. The opportunity for an internship at a prominent Japanese company or research organization will be provided in order to increase the knowledge and experience of cutting edge technologies. This internship will allow international students to become discerning and well-balanced scientists, with a deeper understanding of the Japanese society. The internship will also meet the requirements of the international students who wish to have practical experience in industry.
5. Those finishing their Master’s Course will be awarded the Master of Engineering degree. Those finishing their Doctoral Course will be awarded the Doctor of Philosophy in Engineering or Doctor of Philosophy in Science degree.

**Table 1. Required Credits of Master’s Course in English**

Category	Compulsory/Optional	Minimum Number of Required Credits
Course	Optional	18
Seminar I-IV in your Division	Compulsory	4
Research I-IV in your Division	Compulsory	8

**Table 2-1. Master's Course List**

\* Biennial class. No class in 2020, Semester will be specified in 2021

## ● Exclusively for Special Program of "Engineering Science 21st Century"

Course Code	Course Name	Credit Units	Semester/Term	Division
290370	Solid State Spectroscopy	2	Spring Summer	Materials Physics
290430	Science and Engineering of Correlated Electron Materials	2	Autumn Winter	Materials Physics
290762	Introduction to magnetism and spintronics	2	Spring Summer	Materials Physics
290763	Advanced magnetism and spintronics	2	Autumn Winter	Materials Physics
290631	Properties of Materials	2	Autumn Winter	Materials Physics
290726	Bio-Inspired Chemical Engineering	2	Autumn Winter	Chemical Engineering
290630	Molecular Nanotechnology	2	Spring Summer	Frontier Materials Science
290433	Theoretical Materials Science	2	Spring Summer	Frontier Materials Science
290434	Photophysics of Nanoscale Materials	2	Spring Summer	Frontier Materials Science
290565	Frontier of Nano-scale Materials	2	Autumn Winter	Frontier Materials Science
290735	International Exchange Lecture on Nanoscience and Nanoengineering A	1	Autumn Winter (Intensive)	Frontier Materials Science
290740	International Exchange Lecture on Nanoscience and Nanoengineering B	1	Summer (Intensive)	Frontier Materials Science
290741	International Exchange Lecture on Nanoscience and Nanoengineering C	1	Summer (Intensive)	Frontier Materials Science
29E637	Turbulence Dynamics	2	Spring Summer	Nonlinear Mechanics
29E815	Advanced Fluid Mechanics	2	*	Nonlinear Mechanics
29E104	Advanced Experimental Mechanics	2	*	Nonlinear Mechanics
29E833	Vibrations and Waves	2	Autumn Winter	Nonlinear Mechanics
29E731	Topics in Multiphase Flow Engineering	2	Autumn Winter	Mechanical Engineering
29E040	Topics on Robotics	2	Autumn Winter	Mechanical Engineering
29E639	Stability Analysis of Dynamical Systems	2	*	Mechanical Engineering
29E623	Advanced Theoretical Solid Mechanics	2	Spring Summer	Mechanical Engineering
29E624	Advanced Computational Mechanics	2	*	Mechanical Engineering
29E025	Biomechanics	2	*	Bioengineering
29E100	Theory of Optimum Design and Synthesis	2	*	Bioengineering
29E765	Biomechanism	2	Spring Summer	Bioengineering
29E775	Biomedical data science	2	Spring Summer	Bioengineering

Course Code	Course Name	Credit Units	Semester/Term	Division
290776	Biosystem Engineering	2	Spring Summer	Bioengineering
29E766	Engineering in biology and medicine	2	Autumn Winter	Bioengineering
29E708	Medical Virtual Reality	2	*	Bioengineering
29E355	Quantum Information Science	2	*	Advanced Electronics and Optical Science
290582	Advanced Optoelectronics	2	Autumn Winter	Advanced Electronics and Optical Science
29E583	Systems and Control Theory	2	Autumn Winter	Systems Science and Applied Informatics
29E736	Adaptive Systems Theory	2	*	Systems Science and Applied Informatics
29E510	Signal Analysis Theory	2	*	Systems Science and Applied Informatics
29E292	Theory of Systems Analysis	2	Spring Summer	Systems Science and Applied Informatics
29E713	Applied Robotics	2	Autumn Winter	Systems Science and Applied Informatics
29E714	Intelligent Robotics	2	*	Systems Science and Applied Informatics
29E719	Mixed Reality Systems	2	Autumn Winter	Systems Science and Applied Informatics
29E295	Advanced Robot Systems	2	*	Systems Science and Applied Informatics
29E343	Imaging Systems	2	Spring Summer	Systems Science and Applied Informatics
29E646	Database Systems	2	Spring Summer	Systems Science and Applied Informatics
29E715	Communication Robot	2	Spring Summer	Systems Science and Applied Informatics
29E803	Intelligent Learning System	2	Autumn Winter	Systems Science and Applied Informatics
290822	Topics in Mathematical Sciences 1	1	Autumn	Mathematical Science/Mathematical Science for Social Systems
290823	Topics in Mathematical Sciences 2	1	Winter	Mathematical Science/Mathematical Science for Social Systems
290824	Topics in Mathematical Sciences 3	1	*	Mathematical Science/Mathematical Science for Social Systems
290825	Topics in Mathematical Sciences 4	1	*	Mathematical Science/Mathematical Science for Social Systems
290826	Topics in Mathematical Statistics 1	1	Spring	Mathematical Science/Mathematical Science for Social Systems
290827	Topics in Mathematical Statistics 2	1	Summer	Mathematical Science/Mathematical Science for Social Systems
290828	Topics in Mathematical Statistics 3	1	*	Mathematical Science/Mathematical Science for Social Systems
290829	Topics in Mathematical Statistics 4	1	*	Mathematical Science/Mathematical Science for Social Systems
290749	Data Science and Case Studies I	2	Spring Summer	Mathematical Science/Mathematical Science for Social Systems
290649	Nonlinear System Theory	2	Spring Summer	Mathematical Science for Social Systems
29E007	Systems Optimization and Analysis	2	Spring Summer	Mathematical Science for Social Systems

Course Code	Course Name	Credit Units	Semester/Term	Division
29E588	Intelligent Mathematical Programming System	2	*	Mathematical Science for Social Systems
290366	Introduction to Engineering Science	2	Spring Summer	Engineering Science
290556	Advanced Physical Chemistry	2	Autumn Winter	●Chemistry
290557	Advanced Organic Chemistry	2	Autumn Winter	●Chemistry
290634	Advanced Chemistry for Material Science	2	Autumn Winter	●Chemistry
290628	Material Process Engineering	2	*	●Chemical Engineering
290840	Biochemical Materials Engineering	2	Autumn Winter	●Chemical Engineering
290603	Solid State Devices	2	Spring Summer	●Advanced Electronics and Optical Science
290604	Opto- and Quantum Electronics	2	Autumn Winter	●Advanced Electronics and Optical Science
290656	Advanced Mathematical Science A	2	Spring Summer	●Mathematical Science
290657	Advanced Mathematical Science B	2	Autumn Winter	●Mathematical Science
290658	Advanced Mathematical Science C	2	Autumn Winter	●Mathematical Science for Social Systems
290816	Engineering Science Research Internship 1	1	Arranged by supervisor	Engineering Science
290817	Engineering Science Research Internship 2	2	Arranged by supervisor	Engineering Science
	Seminar I in your Division (Course codes in Table 3 according to your division must be used for registration.)	1	SS/AW	Each Division
	Seminar II in your Division (Course codes in Table 3 according to your division must be used for registration.)	1	SS/AW	Each Division
	Seminar III in your Division (Course codes in Table 3 according to your division must be used for registration.)	1	SS/AW	Each Division
	Seminar IV in your Division (Course codes in Table 3 according to your division must be used for registration.)	1	SS/AW	Each Division
	Research I in your Division (Course codes in Table 3 according to your division must be used for registration.)	2	SS/AW	Each Division
	Research II in your Division (Course codes in Table 3 according to your division must be used for registration.)	2	SS/AW	Each Division
	Research III in your Division (Course codes in Table 3 according to your division must be used for registration.)	2	SS/AW	Each Division
	Research IV in your Division (Course codes in Table 3 according to your division must be used for registration.)	2	SS/AW	Each Division



**Table 2-2. Master's Course List**

Spring Term 2020 (April 9 – June 10)

Summer Term 2020 (June 11 – September 30)

Spring Summer Semester 2020 (April 9 - September 30)

Course Name	Course Name in Japanese	Lecturer	Credit Units	Day	Period	Lecture room	Course code	Semester/ Term
Solid State Spectroscopy	汎分光	Akira SEKIYAMA, Takayuki KISS	2	Mon	3	Σ / G215-221	290370	Spring Summer
Introduction to magnetism and spintronics	磁性とスピントロニクス概論	Yoshishige SUZUKI, Hikaru NOMURA	2	Wed	2	Σ / A304	290762	Spring Summer
Molecular Nanotechnology		Hirokazu TADA, Ryo YAMADA	2	Wed	3	Σ / A304	290630	Spring Summer
Theoretical Materials Science	理論物質科学	Koichi KUSAKABE	2	Tue	4	Σ / A403	290433	Spring Summer
Photophysics of Nanoscale Materials	微小物質光学応答	Masaaki ASHIDA, Masaya NAGAI	2	Tue	2	Σ / G509	290434	Spring Summer
International Exchange Lecture on Nanoscience and Nanoengineering B	国際ナノ理工学特論 B	Seiji TAKEDA, and others	1	Intensive		Interdisciplinary Research Bldg. 3F / 305	290740	Summer (Intensive)
International Exchange Lecture on Nanoscience and Nanoengineering C	国際ナノ理工学特論 C	Seiji TAKEDA, and others	1	Intensive		Interdisciplinary Research Bldg. 3F / 305	290741	Summer (Intensive)
Turbulence Dynamics	乱流力学特論	Genta KAWAHARA	2	Wed	2	Σ / B302	29E637	Spring Summer
Advanced Theoretical Solid Mechanics	固体力学特論	Shigenobu OGATA	2	Fri	4	Σ / B204	29E623	Spring Summer
Biomechanism	バイオメカニズム	Yo KOBAYASHI	2	Wed	4	Σ / B204	29E765	Spring Summer
Biomedical data science	医療生体データ科学	Ken KIYONO	2	Wed	3	Σ / B201	29E775	Spring Summer
Biosystem Engineering		Yasuyuki SUZUKI	2	Tue	3	Σ / B202	290776	Spring Summer
Theory of Systems Analysis	システム解析論	Ryouta SHIMOKURA	2	Fri	3	Σ / E401	29E292	Spring Summer
Imaging Systems	画像システム論	Kosuke SATO	2	Wed	2	Σ / B202	29E343	Spring Summer
Database Systems	データベースシステム論	Weiwei WAN	2	Wed	3	Σ / E401	29E646	Spring Summer
Communication Robot	コミュニケーションロボット論	Yuichiro YOSHIKAWA	2	Thu	3	Σ / E401	29E715	Spring Summer
Topics in Mathematical Statistics 1	統計数理概論1	Fuyuhiko TANAKA, Kengo KAMATANI, and others	1	Tue	1	Σ / J617	290826	Spring
Topics in Mathematical Statistics 2	統計数理概論2	Fuyuhiko TANAKA, Kengo KAMATANI, and others	1	Tue	1	Σ / J617	290827	Summer
Data Science and Case Studies I		Jongchan LEE	2	Wed	5	Σ / I204	290749	Spring Summer
Nonlinear System Theory	非線形システム論	Toshimitsu USHIO Takashi MATSUBARA	2	Mon	1	Σ / E401	290649	Spring Summer
Systems Optimization and Analysis	システム計画論	Masahiro INUIGUCHI	2	Tue	2	Σ / E401	29E007	Spring Summer
Introduction to Engineering Science		Lectures from each division	2	Mon	4	Σ / B300	290366	Spring Summer
Solid State Devices		Masayuki ABE, and others	2	Fri	4	Σ / B104	290603	Spring Summer
Advanced Mathematical Science A		Michinori ISHIWATA, and others	2	Mon	1	Σ / J617	290656	Spring Summer

Class Period:

1st: 8:50-10:20

2nd: 10:30-12:00

3rd: 13:30-15:00

4th: 15:10-16:40

5th: 16:50-18:20

6th: 18:30-20:00

Autumn Term 2020 (October 1 – December 1)

Winter Term 2020 (December 2 – March 31)

Autumn Winter Semester 2020 (October 1 - March 31)

Course Name	Course Name in Japanese	Lecturer	Credit Units	Day	Period	Lecture room	Course code	Semester/ Term
Science and Engineering of Correlated Electron Materials	強相関電子機能工学	Koichi IZAWA, Masaaki SHIMOZAWA	2	Wed	2	Σ / B104	290430	Autumn Winter
Advanced magnetism and spintronics	磁性とスピントロニクス特論	Yoshishige SUZUKI, Hikaru NOMURA	2	Wed	4	Σ / B301	290763	Autumn Winter
Properties of Materials	物性概論	Shintaro ISHIWATA, Hidekazu MUKUDA	2	Tue	2	Σ / A403	290631	Autumn Winter
Bio-Inspired Chemical Engineering	生物発想化学工学	Hiroshi UMAKOSHI, Yukihiro OKAMOTO	2	Fri	1	Σ / A304	290726	Autumn Winter
Frontier of Nano-scale Materials	先端微小物質科学特論	Hajime ISHIHARA, and others	2	Tue	3	Σ / B102	290565	Autumn Winter
International Exchange Lecture on Nanoscience and Nanoengineering A	国際ナノ理工学特論A	Seiji TAKEDA, and others	1	Intensive		Interdisciplinary Research Bldg. 3F / 305	290735	Autumn Winter (Intensive)
Vibrations and Waves	振動波動特論	Nobutomo NAKAMURA	2	Tue	5	Σ / B302	29E833	Autumn Winter
Topics in Multiphase Flow Engineering	混相流工学特論	Kazuyasu SUGIYAMA	2	Tue	4	Σ / B201	29E731	Autumn Winter
Topics on Robotics	ロボット工学特論	Hiroaki HIRAI	2	Wed	2	Σ / A304	29E040	Autumn Winter
Engineering in biology and medicine	生体機能工学	Shinji DEGUCHI	2	Mon	3	Σ / B204	29E766	Autumn Winter
Advanced Optoelectronics	先端光エレクトロニクス	Tadao NAGATUMA, Masayuki FUJITA	2	Wed	3	Σ / B202	290582	Autumn Winter
Systems and Control Theory	システム制御論	Koh HOSODA	2	Thu	2	Σ / E401	29E583	Autumn Winter
Applied Robotics	応用ロボット学特論	Kensuke HARADA	2	Wed	2	Σ / E401	29E713	Autumn Winter
Mixed Reality Systems	複合現実感システム論	Daisuke IWAI	2	Tue	4	Σ / E401	29E719	Autumn Winter
Intelligent Learning System	知的学習システム論	Takayuki NAGAI	2	Wed	3	Σ / E401	29E803	Autumn Winter
Topics in Mathematical Sciences 1	数理概論1	Michinori ISHIWATA, Hidehiro KAISE, and others	1	Wed	5	Σ / J617	290822	Autumn
Topics in Mathematical Sciences 2	数理概論2	Michinori ISHIWATA, Hidehiro KAISE, and others	1	Wed	5	Σ / J617	290823	Winter
Advanced Physical Chemistry		Hiroshi MIYASAKA, and others	2	Tue	4	Σ / A304	290556	Autumn Winter
Advanced Organic Chemistry		Takeshi NAOTA, and others	2	Fri	3	Σ / A304	290557	Autumn Winter
Advanced Chemistry for Material Science		Ichiro HISAKI, and others	2	Mon	4	Σ / A304	290634	Autumn Winter
Biochemical Materials Engineering		Shinji SAKAI, Masaru KOJIMA	2	Mon	5	Σ / B302	290840	Autumn Winter
Opto- and Quantum Electronics		Atsushi SANADA, and others	2	Fri	5	Σ / B302	290604	Autumn Winter
Advanced Mathematical Science B		Michinori ISHIWATA, and others	2	Mon	1	Σ / J617	290657	Autumn Winter
Advanced Mathematical Science C		Hidehiro KAISE, and others	2	Fri	1	Σ / J617	290658	Autumn Winter

Class Period:

1st: 8:50-10:20

2nd: 10:30-12:00

3rd: 13:30-15:00

4th: 15:10-16:40

5th: 16:50-18:20

6th: 18:30-20:00

**Table 3. Compulsory course code for Master's Course, Graduate School of Engineering Science**

**[Department of Materials Engineering Science]**

**(Division of Materials Physics)**

Course	Lecturer	Course code	
		SS	AW
Materials Science and Engineering Seminar I	supervisor	290660	299660
Materials Science and Engineering Seminar II	supervisor	299661	290661
Materials Science and Engineering Seminar III	supervisor	290662	299662
Materials Science and Engineering Seminar IV	supervisor	299663	290663
Materials Science and Technology Research I	supervisor	290664	299664
Materials Science and Technology Research II	supervisor	299665	290665
Materials Science and Technology Research III	supervisor	290666	299666
Materials Science and Technology Research IV	supervisor	299667	290667

**(Division of Chemical Engineering)**

Course	Lecturer	Course code	
		SS	AW
Chemical Engineering Seminar I	supervisor	290422	299422
Chemical Engineering Seminar II	supervisor	299423	290423
Chemical Engineering Seminar III	supervisor	290424	299424
Chemical Engineering Seminar IV	supervisor	299425	290425
Chemical Engineering Research I	supervisor	290426	299426
Chemical Engineering Research II	supervisor	299427	290427
Chemical Engineering Research III	supervisor	290428	299428
Chemical Engineering Research IV	supervisor	299429	290429

**[Department of Mechanical Science and Bioengineering]**

**(Division of Nonlinear Mechanics)**

Course	Lecturer	Course code	
		SS	AW
Seminar in Nonlinear Mechanics I	supervisor	290453	299453
Seminar in Nonlinear Mechanics II	supervisor	299454	290454
Seminar in Nonlinear Mechanics III	supervisor	290455	299455
Seminar in Nonlinear Mechanics IV	supervisor	299456	290456
Research in Nonlinear Mechanics I	supervisor	290457	299457
Research in Nonlinear Mechanics II	supervisor	299458	290458
Research in Nonlinear Mechanics III	supervisor	290459	299459
Research in Nonlinear Mechanics IV	supervisor	299460	290460

**(Division of Bioengineering)**

Course	Lecturer	Course code	
		SS	AW
Seminar in Bioengineering I	supervisor	290486	299486
Seminar in Bioengineering II	supervisor	299487	290487
Seminar in Bioengineering III	supervisor	290488	299488
Seminar in Bioengineering IV	supervisor	299489	290489
Research in Bioengineering I	supervisor	290490	299490
Research in Bioengineering II	supervisor	299491	290491
Research in Bioengineering III	supervisor	290492	299492
Research in Bioengineering IV	supervisor	299493	290493

**[Department of Systems Innovation]**

**(Division of Advanced Electronics and Optical Science)**

Course	Lecturer	Course code	
		SS	AW
Seminar in Advanced Electronics and Optical Science I	supervisor	290676	299676
Seminar in Advanced Electronics and Optical Science II	supervisor	299677	290677
Seminar in Advanced Electronics and Optical Science III	supervisor	290678	299678
Seminar in Advanced Electronics and Optical Science IV	supervisor	299679	290679
Research in Advanced Electronics and Optical Science I	supervisor	290680	299680
Research in Advanced Electronics and Optical Science II	supervisor	299681	290681
Research in Advanced Electronics and Optical Science III	supervisor	290682	299682
Research in Advanced Electronics and Optical Science IV	supervisor	299683	290683

**(Division of Mathematical Science)**

Course	Lecturer	Course code	
		SS	AW
Mathematical Science Seminar I	supervisor	290684	299684
Mathematical Science Seminar II	supervisor	299685	290685
Mathematical Science Seminar III	supervisor	290686	299686
Mathematical Science Seminar IV	supervisor	299687	290687
Mathematical Science Research I	supervisor	290688	299688
Mathematical Science Research II	supervisor	299689	290689
Mathematical Science Research III	supervisor	290690	299690
Mathematical Science Research IV	supervisor	299691	290691

**(Division of Chemistry)**

Course	Lecturer	Course code	
		SS	AW
Seminar in Chemistry Course I	supervisor	290392	299392
Seminar in Chemistry Course II	supervisor	299393	290393
Seminar in Chemistry Course III	supervisor	290394	299394
Seminar in Chemistry Course IV	supervisor	299395	290395
Research in Chemistry Course I	supervisor	290396	299396
Research in Chemistry Course II	supervisor	299397	290397
Research in Chemistry Course III	supervisor	290398	299398
Research in Chemistry Course IV	supervisor	299399	290399

**(Division of Frontier Materials Science)**

Course	Lecturer	Course code	
		SS	AW
Seminar in Frontier Materials Science I	supervisor	290668	299668
Seminar in Frontier Materials Science II	supervisor	299669	290669
Seminar in Frontier Materials Science III	supervisor	290670	299670
Seminar in Frontier Materials Science IV	supervisor	299671	290671
Thesis Research in Frontier Materials Science I	supervisor	290672	299672
Thesis Research in Frontier Materials Science II	supervisor	299673	290673
Thesis Research in Frontier Materials Science III	supervisor	290674	299674
Thesis Research in Frontier Materials Science IV	supervisor	299675	290675

**(Division of Mechanical Engineering)**

Course	Lecturer	Course code	
		SS	AW
Seminar in Mechanical Engineering I	supervisor	290465	299465
Seminar in Mechanical Engineering II	supervisor	299466	290466
Seminar in Mechanical Engineering III	supervisor	290467	299467
Seminar in Mechanical Engineering IV	supervisor	299468	290468
Research in Mechanical Engineering I	supervisor	290469	299469
Research in Mechanical Engineering II	supervisor	299470	290470
Research in Mechanical Engineering III	supervisor	290471	299471
Research in Mechanical Engineering IV	supervisor	299472	290472

**(Division of Systems Science and Applied Informatics)**

Course	Lecturer	Course code	
		SS	AW
Seminar in Systems Science I	supervisor	290757	299757
Seminar in Systems Science II	supervisor	299758	290758
Seminar in Systems Science III	supervisor	290759	299759
Seminar in Systems Science IV	supervisor	299760	290760
Research in Systems Science I	supervisor	290516	299516
Research in Systems Science II	supervisor	299517	290517
Research in Systems Science III	supervisor	290518	299518
Research in Systems Science IV	supervisor	299519	290519

**(Division of Mathematical Science for Social Systems)**

Course	Lecturer	Course code	
		SS	AW
Social System Mathematical Science Seminar I	supervisor	290692	299692
Social System Mathematical Science Seminar II	supervisor	299693	290693
Social System Mathematical Science Seminar III	supervisor	290694	299694
Social System Mathematical Science Seminar IV	supervisor	299695	290695
Social System Mathematical Science Research I	supervisor	290696	299696
Social System Mathematical Science Research II	supervisor	299697	290697
Social System Mathematical Science Research III	supervisor	290698	299698
Social System Mathematical Science Research IV	supervisor	299699	290699

**Table 4. Compulsory course code for Doctoral Course, Graduate School of Engineering Science**

**【Department of Materials Engineering Science】**

(Division of Materials Physics)

Course	Lecturer	Course code	
		SS	AW
Advanced Research in Materials Physics I	supervisor	296001	298001
Advanced Research in Materials Physics II	supervisor	296002	298002
Advanced Research in Materials Physics III	supervisor	296003	298003
Advanced Research in Materials Physics IV	supervisor	296004	298004
Advanced Research in Materials Physics V	supervisor	296005	298005
Advanced Research in Materials Physics VI	supervisor	296006	298006

(Division of Chemical Engineering)

Course	Lecturer	Course code	
		SS	AW
Special Research in Chemical Engineering I	supervisor	296013	298013
Special Research in Chemical Engineering II	supervisor	296014	298014
Special Research in Chemical Engineering III	supervisor	296015	298015
Special Research in Chemical Engineering IV	supervisor	296016	298016
Special Research in Chemical Engineering V	supervisor	296017	298017
Special Research in Chemical Engineering VI	supervisor	296018	298018

**【Department of Mechanical Science and Bioengineering】**

Course	Lecturer	Course code	
		SS	AW
Advanced Research in Mechanical Science and Bioengineering I	supervisor	296025	298025
Advanced Research in Mechanical Science and Bioengineering II	supervisor	296026	298026
Advanced Research in Mechanical Science and Bioengineering III	supervisor	296027	298027
Advanced Research in Mechanical Science and Bioengineering IV	supervisor	296028	298028
Advanced Research in Mechanical Science and Bioengineering V	supervisor	296029	298029
Advanced Research in Mechanical Science and Bioengineering VI	supervisor	296030	298030

**【Department of Systems Innovation】**

(Division of Advanced Electronics and Optical Science)

Course	Lecturer	Course code	
		SS	AW
Special Research in Advanced Electronics and Optical Science I	supervisor	296043	298043
Special Research in Advanced Electronics and Optical Science II	supervisor	296044	298044
Special Research in Advanced Electronics and Optical Science III	supervisor	296045	298045
Special Research in Advanced Electronics and Optical Science IV	supervisor	296046	298046
Special Research in Advanced Electronics and Optical Science V	supervisor	296047	298047
Special Research in Advanced Electronics and Optical Science VI	supervisor	296048	298048

(Division of Mathematical Science)

Course	Lecturer	Course code	
		SS	AW
Special Research in Mathematical Science I	supervisor	296055	298055
Special Research in Mathematical Science II	supervisor	296056	298056
Special Research in Mathematical Science III	supervisor	296057	298057
Special Research in Mathematical Science IV	supervisor	296058	298058
Special Research in Mathematical Science V	supervisor	296059	298059
Special Research in Mathematical Science VI	supervisor	296060	298060

<Optional courses> \*intensive course

**【Department of Materials Engineering Science】**

(Division of Frontier Materials Science)

Course	Lecturer	Course code	
		SS	AW
Advanced Computational Science A 【Biennial class, odd years only】	not available in 2020		
Advanced Computational Science B 【Biennial class, even years only】	Ishihara, Geshi	297002 *	

(Division of Chemistry)

Course	Lecturer	Course code	
		SS	AW
Special Research in Chemistry Course I	supervisor	296007	298007
Special Research in Chemistry Course II	supervisor	296008	298008
Special Research in Chemistry Course III	supervisor	296009	298009
Special Research in Chemistry Course IV	supervisor	296010	298010
Special Research in Chemistry Course V	supervisor	296011	298011
Special Research in Chemistry Course VI	supervisor	296012	298012

(Division of Frontier Materials Science)

Course	Lecturer	Course code	
		SS	AW
Special Research in Frontier Materials Science I	supervisor	296019	298019
Special Research in Frontier Materials Science II	supervisor	296020	298020
Special Research in Frontier Materials Science III	supervisor	296021	298021
Special Research in Frontier Materials Science IV	supervisor	296022	298022
Special Research in Frontier Materials Science V	supervisor	296023	298023
Special Research in Frontier Materials Science VI	supervisor	296024	298024

(Division of Systems Science and Applied Informatics)

Course	Lecturer	Course code	
		SS	AW
Special Research in Systems Science I	supervisor	296049	298049
Special Research in Systems Science II	supervisor	296050	298050
Special Research in Systems Science III	supervisor	296051	298051
Special Research in Systems Science IV	supervisor	296052	298052
Special Research in Systems Science V	supervisor	296053	298053
Special Research in Systems Science VI	supervisor	296054	298054

(Division of Mathematical Science for Social Systems)

Course	Lecturer	Course code	
		SS	AW
Special Research in Mathematical Science for Social Systems I	supervisor	296061	298061
Special Research in Mathematical Science for Social Systems II	supervisor	296062	298062
Special Research in Mathematical Science for Social Systems III	supervisor	296063	298063
Special Research in Mathematical Science for Social Systems IV	supervisor	296064	298064
Special Research in Mathematical Science for Social Systems V	supervisor	296065	298065
Special Research in Mathematical Science for Social Systems VI	supervisor	296066	298066

**【For both MC and DC】**

Course	Lecturer	Course code	
		SS	AW
Lecture on Biological Catalysis with High Performance	Mashima	297003 *	
Lecture on Chemical Catalysis with High Performance	Mashima	297004 *	
Engineering Science International Internship 1	supervisor	297005 *	
Engineering Science International Internship 2	supervisor	297009 *	
Engineering Science International Internship 3	supervisor	297010 *	
Engineering Science Laboratory Rotation A	supervisor	297007 *	
Engineering Science Laboratory Rotation B	supervisor	297008 *	

## 2. Application procedure of Doctoral Degree

It is necessary to apply for the doctoral degree through the respective laboratory. The Graduate Students Section will provide information regarding the schedule and details separately.

Documents to be submitted	Number of copies	Note
Title of doctoral thesis for Ph.D. applicant and relevant information	1	Both Data and Paper <u>*After submission, no change in the title will be accepted.</u>
Form 1 Application for Academic Degree	1	
Doctoral Thesis	5 books 1 PDF file	
Check List	1	Submit with Doctoral Thesis.
Form2 List of Theses	1	
Form 3 Abstract of Thesis	2 Data	The file consists of Form 3 & Form7. After completing the Form 3, submit (1) Paper to the Graduate Students Section and (2) Data with Form 7 attached to your Supervisor.
Form 4 Applicant History	2	Date of Entrance/Graduation/Withdrawal <u>must be filled out accurately according to your diploma.</u>
Form 10 Doctoral Thesis Internet Publication Confirmation (University's institutional repository)	2	Check carefully the issue of rights for internet publication and <u>consult with your supervisor before submission.</u> When applicants request postponement of the internet publication through OUKA due to compelling reasons, the content of Abstract of Thesis (Form 3) will be uploaded to OUKA. * Form 11 should be submitted only if applicable.
Written Statement (This document should be submitted only if applicable.)	1	*This document must be submitted only where applicants use the results of joint researches conducted at other places than Graduate School of Engineering Science in whole or part of the doctorate main thesis. I.e. when applicants use co-authored papers belonging to other organizations than Graduate School of Engineering Science. NOTE: Applicants enrolled in 2007 or before do not need to submit this document.
Letter of consent (This document should be submitted only if applicable)	1	*Those who submit the above form "Written Statement" must submit this form by requesting all the co-authors related to this doctoral thesis to fill in. NOTE: Applicants enrolled in 2007 or before do not need to submit this document.
Form 9 Confirmation Sheet	1	This sheet is to confirm the spelling and the order of your name to be printed on your diploma and transcript. The name must be <u>the same as written in the Form 4, "Name to be Printed on Academic Degree".</u>

## 3. Method for making tuition payments

- 1) Tuition is paid in two equal installments. The first installment is due on May 27; the second installment is due on November 27. Tuition fees are withdrawn from the account one opens at a bank designated by the university. If the payment due date falls on a non-business day, your payment will be processed on the next business day.
- 2) Students who cannot pay tuition fees by automatic deduction, auditing students, special auditors, and research students are required to pay via bank transfer. Please transfer the tuition fee at a bank using the request form for tuition payment sent by the university.
- 3) If/When tuition fees are revised, outstanding fees must be paid at the revised rate.
- 4) For additional information on tuition fee payment procedures, please contact the Accounting Manager, Accounting Division, Department of Finance, Administration Bureau. **Tel: 06-6879-7055**
- 5) If the student fails to pay the tuition fee by the appointed date and after a considerable period after several requests

for payment, he/she shall be removed from the university registration.

\*Frequently Asked Questions (FAQs) can be found the following website: <http://osku.jp/i0628>

### Tuition Fee Exemption

A student who is experiencing difficulty paying tuition and/or enrollment fees and who has achieved the minimum academic standard may apply for a tuition fee exemption. Applicants who have passed Osaka University screening can receive a full- or half-tuition and/or enrollment fee exemption: <http://osku.jp/m0684>

## 4. Accident Insurance

### Personal Accident Insurance for Students Pursuing Education and Research (PAS)

Personal Liability Insurance for Students --in Japanese, "Gakusei Kyoiku Kenkyu Saigai Shogai Hoken" [short form: "Gakkensai"]--is a nationwide system to indemnify students for the number of days that medical treatment is needed for injury incurred during regular curricular activities, extracurricular activities, or while commuting to or from university. All students are required to join this insurance plan.

Students who have not obtained the insurance and those who are repeating a year of school are required to pay the premium as soon as possible at a post office using the Request form for tuition payment that is available at COOP offices on Toyonaka, Suita, or Minoh campuses.

#### 1) Duration of insurance

Admission	Duration of insurance
April	April 1 ~ March 31 of the expected year of graduation
October	October 1 ~ September 30 of the expected year of graduation

The duration of insurance for students who obtain this insurance plan from the middle of a semester starts on the day following the date of premium payment.

#### 2) Premiums

	Master's Course	Doctoral Course
1 <sup>st</sup> year	1,750	2,600
2 <sup>nd</sup> year	1,000	1,750
3 <sup>rd</sup> year		1,000

Students in the master's course cannot make a lump payment of the insurance premiums for both the master's course and the doctor's course. Insurance premiums must be paid at the start of the doctor's course after advancing to the course.

#### 3) Types and amounts of insurance

For more information, view the **Handbook for Enrollment of Personal Accident Insurance for Students**

**Pursuing Education and Research** that you are given at the time of participation.

Type of indemnity	Types and amounts of insurance	Additional indemnity for hospitalization
During regular curricular activities or school events	<ul style="list-style-type: none"> <li>● Indemnity for loss of life: 20 million yen</li> <li>● Insurance for disability: In relation to the degree of aftereffect: 1,200,000 yen - 30 million yen</li> <li>● Injury and/or disease requiring four or more days of actual medical treatment: 3,000 yen - 300,000 yen</li> <li>● Number of treatment days: <b>1</b> or more</li> </ul>	4,000 yen/day (from day 1)
While commuting to and from school facilities	<ul style="list-style-type: none"> <li>● Indemnity for loss of life: 10 million yen</li> <li>● Insurance for disability: In relation to the degree of aftereffect: 600,000 yen - 15 million yen</li> <li>● Injury and/or disease requiring four or more days of actual medical treatment: 6,000 yen - 300,000 yen</li> <li>● Number of treatment days: <b>4</b> or more</li> </ul>	4,000 yen/day (from day 1)

<p>During extracurricular activities at or in school facilities While you are in school facilities</p>	<ul style="list-style-type: none"> <li>● Indemnity for loss of life: 10 million yen</li> <li>● Insurance for disability: In relation to the degree of aftereffect: 600,000 yen - 15 million yen</li> <li>● Injury and/or disease requiring four or more days of actual medical treatment :30,000 yen - 300,000 yen</li> <li>● Number of treatment days: <b>14</b> or more</li> </ul>	<p style="text-align: center;">4,000 yen/day (from day 1)</p>
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- \* Accidents when engaged in an activity prohibited by the university are not covered by this insurance.
- \* Accidents while commuting to and from school facilities are covered as long as you observe what is stipulated in Bicycle and Transportation Regulations.
- \* Only extracurricular activities outside school facilities that you have informed the university of are covered by this insurance.
- \* Accidents that occur while you are in a dormitory on campus are not covered by this insurance.

#### 4) Procedures for insurance claim

If an accident that may be covered by this insurance happens, contact the COOP office as soon as possible. Information regarding the date, location, and injury or disease must be communicated to the insurance company within 30 days of the accident. If this is not communicated within 30 days, the insurance company may not pay. Documents necessary for claiming insurance are available at the COOP offices on the Toyonaka, Suita, and Minoh campuses.

Please submit the insurance claim form to the COOP Office after the treatment has finished.

#### Liability Insurance for Students Pursuing Education and Research (LSR)

Personal Liability Insurance for Students --in Japanese, "Gakusei Kyoiku Kenkyu Baisho Sekinin Hoken" [short form: "Gakkenbai"]-- insures one against personal liability claims in the case of injury to someone or damage to another person's property during regular curricular activities, school events, internships, nursing care recognized as an extra curricular activity, teaching practice, childcare practice, or volunteer activities as well as during commuting to and from the sites of such activities. (However, medical related training such as clinical practice or nursing practice are excluded from this coverage.) This plan is applied to students who participate in Personal Accident Insurance for Students Pursuing Education and Research (PAS). The premium is 340 yen per year (course A).

In principle, all students at the Graduate School of Engineering Science are obligated to join Gakkenbai (or any other liability insurance equivalent to this).

## 5. Status Changes

When submitting notifications of student status changes (i.e. temporary leave of absence, readmission, withdrawal, study abroad), please fill out the designated form and submit it to the Graduate Students Section after obtaining the approval of your academic advisor.

Please note that applications for temporary leave of absence, withdrawal and study abroad must be submitted to the Graduate Students Section after the payment of the tuition fees at least one month prior to the start of temporary leave of absence, withdrawal and study abroad.

Please note that your formal request may not be accepted in case of late submission or if you have not paid tuition fees.

\* In particular, please keep in mind that in case of temporary leave of absence or withdrawal, if you should leave without submitting a formal request, you will be obliged to pay tuition fees for the next semester.

## 6. Study Abroad

Those who wish to study abroad must notify the Graduate Students Section and take the necessary procedures two months prior to departure.

### 1) Travel Abroad Registration System (required for all students)

If you travel abroad for any of the reasons noted below, be sure to enter your travel information into the system.

1. When you participate in programs such as student exchange programs and training overseas sponsored by the University,
2. When you are involved in research activity overseas for participating in academic conferences or fieldwork,
3. When you travel abroad for any reason other than those mentioned above, such as internships overseas, study/travel overseas, or when international students return home temporarily, regardless of whether it be for business or personal reasons.

Go to the URL below to register: <http://osku.jp/m0783>

2) **Insurance for study abroad (required for all students)**

3) **OSSMA(Optional)**

Osaka University has asked students who will study abroad to join the Overseas Student Safety Management Assistance (OSSMA).

When you are in trouble and need some advice while traveling abroad, services will be available in Japanese 24 hours a day, 365 days a year.

Further information can be found the following website: <http://osku.jp/j0283>

## 7. Cancellation of classes due to weather warnings, disasters, and suspension of public transportation

1) **Cancellation of classes after issuance of weather warnings**

If a “Storm Warning (暴風警報)” or an “Emergency Warning\* (特別警報)” is issued for regions including the cities of Toyonaka, Suita, Ibaraki, and Minoh, classes will be cancelled. If either of these warnings are issued during a class, classes will be cancelled from the next class.

\*Classes will be cancelled for an issuance of *any type* of Emergency Warning (特別警報).

2) **Cancellation of classes during suspension of public transportation**

If the service of one or more of the following lines of public transportation has been suspended (including partial suspension) due to a disaster, natural or man-made, classes held on the campus(es) affected by this suspension will be cancelled.

<b>Toyonaka Campus</b>	Hankyu Railway (Takarazuka Line: Umeda – Takarazuka) or Osaka Monorail (all lines)
<b>Suita Campus</b>	Hankyu Railway (Senri Line: Umeda/Tenjinbashisuji-rokuhome – Kita-senri) or Osaka Monorail (all lines)
<b>Minoh Campus</b>	Hankyu Railway (Senri Line: Umeda/Tenjinbashisuji-rokuhome – Kita-senri), Hankyu Bus (Senri-chuo – Osaka University School of Foreign Studies/Matani jutaku-4) or Osaka Monorail (all lines)

However, classes will not be cancelled for temporary suspension of train and/or bus service due to traffic accidents, etc.

3) **Lifting of weather warnings and/or resumption of public transportation service**

If weather warnings are lifted or public transportation services have resumed, classes will be held according to the following chart:

<b>If the warning is lifted or transportation service is resumed...</b>	<b>classes will be...</b>
before 6 am	held all day
after 6 am and by 9 am	held in the afternoon
after 9 am or not resumed at all	cancelled all day

\*The lifting of weather warnings and/or resumption of public transportation service will be confirmed via television, radio, and the internet.

4) **Cancellation of classes following an earthquake**

If an earthquake with an intensity measuring 5 and higher on the the Japanese intensity scale is recorded in the cities of Toyonaka, Suita, Ibaraki, and/or Minoh, classes for that day will be cancelled. If the earthquake is recorded at 5:15 pm or later, classes for the following day will also be cancelled.

In addition, if an earthquake is recorded outside of the areas listed above or if an earthquake with an intensity of 5 and lower is recorded, the guidelines in section (2) regarding cancellation of classes due to suspension/stoppage of public transportation service will apply.

5) **Cancellation of classes due to evacuation advisory/order**

If an evacuation advisory/order is issued in the cities of Toyonaka, Suita, Ibaraki, and/or Minoh, classes may be cancelled in departments located in these areas, and so we ask you to follow the instructions provided by your department.

6) **Other notes**

\*Even if your classes are not cancelled for any of the reasons listed above, if you are not able to attend class due to inevitable reasons, for example, your residence and/or route to the university has had:

1. weather warnings listed in (1) issued,
2. an earthquake with the attributes outlined in (4), and/or
3. public transportation services excluding those stated in (2) are suspended, the university will take special



consideration to avoid any detriment to you in your studies, so please contact the student affairs staff in the department in which your class is held and/or the Graduate Students Section of Engineering Science.

\*If weather warnings, suspension of public transportation, and/or evacuation advisories are anticipated, or classes must be cancelled for any other reason, the university will make an announcement via the Osaka University Official Homepage or KOAN.

## 8. Bicycle and Transportation Regulations

### 1) Transportation to and from campus

Osaka University encourages its students to walk or use public transportation to get to and from its campus. Students are not permitted to commute to OU campuses by car, motorcycle, or motor scooters.

Students are strongly requested to always obey all traffic regulations and behave in a responsible and mature manner. Students commuting by bicycle are expected to obey the following rules.

### 2) Concerning Bicycles

Be considerate of pedestrians and local people. Under the Road Traffic Law, bicycles are deemed as vehicles. Cyclists must follow traffic rules, and malicious violators and individuals who cause fatal accidents in violation of these rules will be strictly punished. Keep in mind that bicycles can be dangerous to pedestrians.

The following are rules for safe bicycling on and around the OU campus. Cyclists should be aware that they must use the vehicle carefully in order to keep the general public living near OU as well as those on campus safe.

### 3) Bicycle Regulations (Excerpt)

1. Maintain safe and reasonable speeds at all times.
2. Drive on the left side of the road.
3. The following activities cause trouble and are dangerous as well. Please do **not**: park on the road, abandon your bicycle, park for an extended period of days, ride your bicycle in parallel to others, and/or use your cell phone while riding.
4. Riding bicycles on the *Handai-zaka* [Osaka University Slope] is prohibited.
5. Regarding motorized vehicles, bicyclists are requested to use the **designated gates only** for entering and leaving OU campuses.
6. Bicycles should be parked in an orderly manner in the bicycle parking lots.
7. Prevent theft of your bicycle by double-locking it and putting a sticker with your name and address on it.
8. Be careful not to cause trouble for members of the general public living near OU.

### 4) Bicycle Insurance

Osaka Prefecture passed an ordinance requiring all bicycle owners to have bicycle insurance, which comes into effect on July 1, 2016. Those who come to school by bicycle, or otherwise use a bicycle outside of school grounds, must obtain bicycle insurance. Please purchase an insurance plan at your earliest convenience. For those who have already purchased any of the insurance plans listed below are not required to enroll in bicycle insurance.

1. Expansive Insurance for General Student Life (Futaigakuso)
2. Personal Liability Insurance for Students (Gakubai) through the COOP Insurance Program
3. Automobile Insurance (limited to only when the Personal Liability Clause is added)
4. Fire Insurance (limited to only when the Personal Liability Clause is added)
5. Study Abroad Insurance (limited to only when the Personal Liability Clause is added)

\*For any inquiries about enrolling in bicycle insurance, please contact the Graduate Students Section.