

Academic Year 2019-20
**Graduate School of Integrated
Science and Technology**
Department of Science
Master's Degree Program

Application Guidelines

Foreign Students Admission

National University Corporation
Shizuoka University

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Shizuoka University Vision and Goals

“Freedom and Enlightenment: Creating the Future”

This vision is vital not only to education but also for unfettered, creative research based on free innovation and collaboration with a mutually enlightened society. It is very much a concept that should be passed down across the generations. Aware of this fact, the students and staff at Shizuoka University shall act as pillars of education, research, collaboration with society, collaboration with industry, and international collaboration, continuing to raise high the ideals of “freedom and enlightenment”. They will join hands to tackle not only regional issues but also issues on a global scale, tirelessly seeking to bring peace and prosperity to humanity and to “create a future” that is filled with hope.

Shizuoka University, based in the vision of “Freedom and Enlightenment: Creating the Future” as outlined above, will serve as a comprehensive university from our base in Shizuoka Prefecture, holding respect for the rich nature and culture of the region, and making a contribution to both the future of humanity and the development of regional society through the nurturing of human resources via high quality education and creative research.

For more details, please see: <http://www.shizuoka.ac.jp/outline/vision/pdf/manifesto.pdf>

Graduate School of Integrated Science and Technology

Admissions Policy

Educated Individuals

The Graduate School of Integrated Science and Technology aspires to educate students who, amidst the progress of globalization, are capable of acting flexibly and surpass the boundaries of their field of specialization to solve societal, scientific and technological problems and are able to contribute towards research and development efforts and the international exchange necessary for companies to expand overseas. Further, the students should possess the skills necessary for engaging in higher level research activities at a graduate school.

Education Aspired To

The school offers education that provides the students with the ability to gain perspective into broad and integrated multidisciplinary fields, including determining the social value of related disciplines and the student's existing knowledge, based on the fundamentals of individual areas of specialization; the internationally needed ability to comprehend, publish and debate in a foreign language on topics within the student's specialization as well as related fields; and the fundamental abilities necessary to autonomously engage in higher level research activities at a graduate school.

The Type of Students We Are Looking For

We are looking for students who have a strong interest in current social, scientific and technological issues, and a strong desire to contribute to the society through research and advancement of science and technology. The students should also be internationally minded and able to study and conduct research and development activities in collaboration with students and researchers from other countries.

Qualities and Abilities Necessary for Admission

Students are required to possess the fundamental knowledge and skills relating to their field of specialization expected of undergraduate students. They are also required to possess the capacities of logical thinking, judgment and expression necessary to apply their knowledge and skills. Lastly, students are expected to be capable of international communication and eager to study in cooperation with diverse people.

Department of Science Admissions Policy

Educated Individuals

The Department of Science aims to cultivate students who, in this world of advanced science and technology, possess the ability to solve problems in a multitude of principal and applied fields by using basic scientific methods.

There is a demand today for scientific minds that pursue truth for the purpose of bettering mankind. To meet this demand, we engage in high-level research training in

each of our fields of specialization and emphasize a broad perspective.

The purposes of science education and research are to develop one's ability to gain insight, to adjust oneself to given circumstances, and to take the action required to meet the needs of society and globalization. To accomplish these purposes, research training must be supported by both fundamental understanding and creative thinking. This is the type of education that achieves the goal of nurturing the profound learning skills required in such fields as international high-level technology and research.

Education Aspired To

1. We aim to develop a broad perspective, high-level specialist knowledge and creative research capabilities in all our students.
2. We emphasize the fact that theoretical activity, seminars, and specialized research are interconnected; our teams of teaching staff carefully guide students through both their education and their research.
3. By providing education that emphasizes basic theories, and by offering joint classes to students from all disciplines, English classes and more, we aim to cultivate the capacity for gaining perspective in multidisciplinary fields and act in an international environment while enhancing the students' abilities to solve problems in their own specialist fields.

The Type of Students We Are Looking For

We are looking for motivated students who have a strong interest in the problems presented by globalization and the modern society in all its diversity, and who are capable of considering issues from a wide range of perspectives without being biased towards their specialty. With regard to scientific phenomena in particular, we are looking for students who have a profound interest in the research that is based on the fundamental theories of such phenomena.

Qualities and Abilities Necessary for Admission

The entrance examinations used to select students for the Department of Science will be conducted to evaluate whether students have a fundamental understanding of science and the ability to think logically, as well as a profound interest in scientific phenomena based on the fundamental theories of such phenomena. For the general admission and foreign student's admission, a written examination in which students'

basic knowledge of their major fields of study, logical thinking, and reading comprehension as well as expressive abilities in English are evaluated. There will also be an oral examination in which their attitudes towards academics and research are evaluated. Further, for the self-recommended admission, in addition to the evaluation of students' basic qualities and abilities upon examining their application documents, there will also be an interview examination in which they will be evaluated on their proactive attitudes towards academics and research, such as their deep interest and enthusiasm for their major field of study.

Foreign Students Admission

1. Application Eligibility

Persons not of Japanese nationality who fall into either of the following categories:

(1) Those who have completed 16 years of school education overseas, or who expect to complete the sixteenth year of education by March 2019.

(2) Those who have completed 15 years of school education overseas, or who expect to complete the fifteenth year of education by March 2019, and who are deemed by our Department of Science to have earned the required credits with excellent grades.

(3) Those who have obtained a degree equivalent to a Bachelor's degree, or who expect to do so by March 2019, through the completion at a university overseas or other school overseas (regarding the overall state of education and research activities etc., restricted to those facilities that has been evaluated by persons approved by the government or related body in the applicable country, or have received separately stipulated equivalency as such from the Minister of Education, Culture, Sports, Science and Technology) of a course that is 3 or more years in length (including cases in which the course will be completed in Japan via a correspondence course offered by an overseas school, and in which the course is completed in education facilities that comprise part of the school education system in an overseas country and have meet with the previous stipulations).

<<Note>> There will be a preliminary examination for applicants from category (2). Such applicants must follow the instructions in Section 5: Preliminary Examination.

2. Number of Admissions by Courses

Course	Division	Number of students to be admitted
Mathematics	Fundamental mathematics, mathematical analysis	Few
Physics	Fundamental physics, applied physics	Few
Chemistry	Structural chemistry, functional chemistry	Few

Biological Science	Environmental response biology, biological regulation biology, cellular and developmental biology	Few
Geosciences	Geodynamics, biogeosphere science	Few

3. Application Period

July 13, 2018 (Friday) - July 20, 2018 (Friday) *excludes Saturday, Sunday and national holidays

(The university office will accept applications from 09:00 to 12:30 and from 13:30 to 16:00.)

Applications sent by mail should be sent by registered mail and the words “Application for Graduate School (Foreign Student)” should be written in red ink on the front of the envelope. Applications by mail must arrive by 16:00 on July 20, 2018 (Friday).

4. Address for Submitting Applications

Student Affairs Unit of the Faculty of Science, Shizuoka University

836 Ohya, Suruga-ku, Shizuoka-shi, 422-8529

TEL (054) 238-4861

5. Preliminary Examination

Those who wish to apply under category (2) of Section 1: Application Eligibility should submit the following documents to the address stated in Section 4: Address for Submitting Applications by June 15, 2018 (Friday).

Application form for preliminary examination	Complete the application form provided by the Department of Science.
Letter of recommendation	Form provided by our Department of Science, to be used for (1) recommendations by several teaching staff (including faculty advisers) of the applicant’s university, and (2) recommendation by the department head. Form must be enclosed in a sealed envelope.
Transcript	Prepared by the dean or department head and enclosed in a sealed envelope.
Return address	Complete the form provided by the Department of Science.

Results of preliminary examinations will be mailed to applicants on June 29, 2018 (Friday). Those who pass the preliminary examinations must submit the application documents in accordance with Section 3: Application Period and Section 6: Application Documents.

6. Application Documents

Application form	Application form provided by the Department of Science (entrance application form)
Foreign students' application form	Form provided by the Department of Science by separate request; see Section 14: <u>Important Matters</u> .
Application fee 30,000 yen (Not required by government-financed foreign students)	Use the enclosed payment slip to pay the fee at a post office. (For refund after payment, see Section 14: <u>Important Matters</u> .)
Certificate of payment for application fee	Completed form provided by our Department of Science with the certificate affixed.
Transcript	Prepared by the dean or department head of the applicant's university and sealed in an envelope.
Certificate of graduation or diploma	Please submit originals (copies will not be accepted).
Permission to take examinations	Issued by the dean or head of the student's graduate school (applies only to students currently attending another graduate school, unless the student expects to complete her/his studies in March 2019).
Return envelope	On envelope provided by our Department of Science write the name, address and postal/zip code of the applicant and affix an 82-yen stamp. (The envelope will be used to mail examination admission slips. Please confirm mailing fees with the Administrative Office of the Faculty of Science if you wish the admission slip to be mailed overseas.)
Return address	Please write the name, address and postal/zip code of the applicant on the form provided by the Department of Science (used to mail the acceptance form and information regarding registration procedures).
Certification as a Government-financed Foreign Student (Undesignated Format)	Government-financed foreign students currently attending a different university should provide certification as a government-financed foreign student as issued by their current university.
Other	For those who are applying for any course other than mathematics, please make an A4 size copy of the official certificate or score sheet of the TOEIC test and submit it. That TOEIC test must have been taken in April 2015 or later. The original score sheet will be checked at the time of the interview; be sure to bring it to the examination.

*1 Other letters of recommendation prepared by faculty advisers at the applicant's university may also be enclosed.

*2 "TOEIC test" given in this application refers to "TOEIC L&R test" for the tests taken

in August 2016 or later.

7. Selection Policy

Course of Mathematics

Using basic mathematics knowledge, such as mathematical analysis, algebra, geometry, and mathematical logic, this course trains students in the development of advanced mathematical skills. We educate students to be fully able to work creatively, whether their future mathematical activities involve research, teaching, or applied mathematics. Applicants' abilities, knowledge, and aptitudes – all necessary prerequisites for their training – will be comprehensively assessed through the following examinations:

(1) Written examinations

Specialized subject: Basic mathematics knowledge, as well as the ability to think logically and to describe matters clearly, will be evaluated. Furthermore, some of the questions will be asked in English, with the intention of evaluating English reading comprehension and expressive abilities.

(2) Oral examination

Basic mathematical knowledge and the ability to think logically and to describe matters clearly – factors not assessed in the written examination – will be evaluated. Reasons for applying, the students' future plans, and their attitudes towards learning and research (enthusiasm, ambitions, etc.) will also be judged.

Course of Physics

Using the fundamentals of physics, such as mechanics, electromagnetism, quantum mechanics, and statistical mechanics, this course trains students in the development of advanced physics skills and the ability to solve real physics problems. We educate students to be fully able to work creatively, whether their future engagement with physics involves research, teaching, or applied physics. Applicants' abilities, knowledge, and aptitudes – all necessary prerequisites for their training – will be assessed through the following examinations:

(1) Written examination

Specialized subject: Basic knowledge required for study and research in this course will be evaluated.

(2) The TOEIC test score is used for evaluation of English ability necessary for learning and research at the graduate school.

(3) Oral examination

The student's level of understanding of physics, together with the student's aptitude for research in this course (to the extent that those factors are not assessed in the specialized subject examination), will be comprehensively judged.

Course of Chemistry

This course aims to develop students' academic research abilities, along with their abilities to contribute to the solution of various problems in society. Applicants' abilities, knowledge, and aptitudes – all necessary prerequisites for their training – will be comprehensively assessed through the following examinations:

(1) Written examinations

Specialized subject: A basic knowledge of chemistry, along with specialized knowledge in research fields in which applicants intend to work, will be comprehensively evaluated.

(2) The TOEIC test score is used for evaluation of English ability necessary for learning and research at the graduate school.

(3) Oral examination

Reasons for applying, the students' future plans, attitudes towards learning and research (enthusiasm, ambitions, etc.), basic knowledge, and logical thinking and expressive abilities will be evaluated.

Course of Biological Science

This course aims to train students to apply their knowledge in many ways, enough to be able to handle various biological science issues from a macro perspective, and also to be able to deal professionally at the micro (cellular and gene) levels. Whether the applicants' interests and motivations, reasons for applying, basic knowledge, and research ability are sufficient to pursue research for the Master's degree, will be comprehensively assessed through the following examinations:

(1) Written examination

Specialized subject: Basic expertise and the ability to think logically, which is essential to research in this course, will be judged.

(2) The TOEIC test score is used for evaluation of English ability necessary for

learning and research at the graduate school.

(3) Oral examination

Applicants will be asked about the research they have been doing as undergraduates and such. The applicants' basic knowledge and understanding of the research, along with their ability to think logically, to describe matters clearly, to deliberate and to discuss, will be judged. Applicants' future plans, as well as attitudes toward learning and research (enthusiasm, ambitions, etc.), will also be assessed.

Course of Geosciences

This course aims to educate students in dealing with various problems in geosciences and environmental science on a professional level. Whether the applicants' interests and motivations, reasons for applying, basic knowledge, and research ability are sufficient to pursue research for the Master's degree, will be comprehensively assessed through the following examinations:

(1) Written examinations

Specialized subject: Basic expertise and the ability to think logically, which is essential for research in this course, will be judged.

(2) TOEIC test scores will be used to evaluate English ability as required for learning and research in the graduate school.

(3) Oral examination

Applicants will be asked about the research they have been doing as undergraduates and such. The applicants' basic knowledge and understanding of the research, along with their ability to think logically, to describe matters clearly, to deliberate and to discuss, will be judged. Applicants' future plans, as well as attitudes toward learning and research (enthusiasm, ambitions, etc.), will also be assessed.

8. Selection Criteria

The results of the written and oral examinations together with transcripts will be used to determine successful applicants.

9. Information about Examinations

Date	Subject and allotment of points		Time
August 23, 2018 (Thursday)	Written Exams	Specialized subject: 100 points	09:30 - 12:30
August 24, 2018 (Friday)	Oral Exams (individual)	100 points (200 points for the Course of Mathematics)	09:00 -

(1) Examination venue: Shizuoka University Faculty of Science (836 Ohya, Suruga-ku, Shizuoka-shi)

(2) For all courses other than mathematics the TOEIC test score is used, converting it into points, with 50 points as a perfect score. The English points (Y) are to be calculated from the TOEIC test score (X), using the formula below.

$$Y = \{(X - 250) \div 500\} \times 50$$

A score of 750 or more is to be evaluated at 50 points, and a score of 250 or less is to be given 0 points. Decimals are to be rounded off to the nearest whole number.

At the time of the interview, the original TOEIC official certificate or score sheet will be checked; be sure to bring it to the examination. The TOEIC test must have been taken in April 2015 or later.

(3) Only applicants who have passed the written examinations will be permitted to take the oral examinations (individual interviews). A list of applicants who have passed the written examinations will be posted at the entrance to the Faculty of Science Building A at 08:30 on August 24, 2018 (Friday).

(4) Applicants for the Course of Biological Science are required to prepare a presentation on their undergraduate research, which they will be asked to give during the oral examination. Approximately seven minutes will be allotted for each presentation. Up to 5 pages of printouts in A4 size may be used for the purpose of explanation.

(5) Applicants for the Course of Geosciences are required to prepare a presentation in Microsoft PowerPoint on their undergraduate research, which they will be asked to give during the oral examination. Ten minutes will be allotted for each presentation.

Explanation Regarding Examination Subject

Written Exams	Specialized Subject	Questions from each course will be given in Japanese (with English translations upon request) and should be answered in either Japanese or English.
Oral Exams		Each course shall give its own exam (including an assessment of the applicant's Japanese language abilities).

10. Selection of Research Guidance Teachers

When making your application, refer to "Outline of the Department of Science" (pages 19, 20) and "Introduction to the Department of Science" (pages 21 - 25): decide on the division and academic research area that best match your desired research field. It is advisable to make inquiries beforehand with the academic adviser with whom you wish to work.

11. Announcement of Successful Applicants

We plan to post the list of successful applicants at the entrance to the Faculty of Science Building A at noon on August 31, 2018 (Friday). Successful applicants will also be notified by mail; results will also be available via the Faculty of Science website (<http://www.sci.shizuoka.ac.jp/>).

12. Admission Registration Procedures

Registration is planned for mid-March 2019. Detailed information regarding registration (including application for exemptions from admission and tuition fees) will be mailed to successful applicants by early March 2019.

13. Admission and Tuition Fees

- ◆ Admission fee 282,000 yen (actual fee for 2018-19)
- ◆ Tuition 535,800 yen per year (267,900 yen per semester)
(actual fee for 2018-19)

(Note)

(1) The tuition fee for the first semester must be paid between April 1, 2019 and April 30, 2019.

(2) The admission fee paid during admission procedures shall not be reimbursed for any reason whatsoever.

(3) This University is in compliance with fee standards established by the Ministry of Education, Culture, Sports, Science and Technology.

(4) In the event of a change in the tuition fee during the course of study, the new fee will be applied from the time of the change.

14. Important Matters

(1) Those who wish to apply for foreign student admission: please separately request a “Foreign Students’ Application Form” as described in Section 6: Application Documents. When making such a request please enclose a self-addressed envelope, (rectangular No. 3 size, 12 cm x 23.5 cm, affixed with an 82-yen stamp. Please confirm mailing fees with the Administrative Office of the Faculty of Science if you wish the admission slip to be mailed overseas), and a document detailing the following items (in any format).

(1) Name (Furigana) (2) Current address (3) Contact telephone number

(4) Course you wish to enter (5) First choice for division and lecturer

(2) Applicants must bring their examination admission slips with them to examinations.

(3) Changes on application documents will not be accepted once they have been submitted.

(4) Once received, the application fee will not be refunded for any reason except for the cases mentioned below:

1) A refund of the application fee can be requested when

(i) The application fee had been paid, but the application for our Department of Science was not made.

(ii) The application fee was paid twice by accident.

(iii) There were inadequacies in the application documents or application conditions, and so the application was not accepted.

2) Amount of the application fee to be refunded

At the applicant’s request, the amount that was paid doubly, or the total amount, will be refunded.

3) How the refund of the application fee can be requested

If either of the above-mentioned (i) or (ii) applies: Use letter paper or its equivalent and make a request form for refund of the application fee. Items (1) to (8) mentioned below must be written clearly. Be sure to attach the postal transfer certificate of payment for application fee, or the payment receipt.

Mail to: Administrative Office of the Faculty of Science, Shizuoka University
836 Ohya, Suruga-ku, Shizuoka-shi, 422-8529

It must arrive by August 15, 2018 (Wednesday).

If the above-mentioned (iii) applies: When the application documents are returned, the request form for the refund of the application fee will be enclosed. After filling it in, send it by mail.

Any handling charges for the refund shall be the responsibility of the person requesting the refund.

Request for the refund of application fee for the Graduate School of Shizuoka University

1. Reason for requesting refund
2. Admission category (general admission, self-recommended admission, foreign student admission, etc.)
3. The Graduate School Course to which the applicant planned to apply
4. Name
5. Present address
6. Contact telephone number
7. Amount to be refunded
8. Account into which the refund is to be paid
 - Name of the financial institution, name of the branch
 - Type of account (checking/ordinary); account number
 - Owner of the account
 - If the owner of the account is not the applicant: relationship to the applicant

* Regarding application fee for the applicants who were victims of the Great East Japan Earthquake, the full amount will be refunded upon request from the applicant. For more details, please refer to the “Special measures for application fees” URL as follows: http://www.shizuoka.ac.jp/th_earthquake/eq_examin2014.html

(5) Successful applicants who are currently employed or who will be employed after April 2019 must submit, at the time of registration, a “letter of permission to enter the school” from the head of their workplace.

(6) Address all requests regarding application guidelines and questions regarding the entrance examinations to the office below. When application guidelines are requested by mail, write “Request for application guidelines for the Department of Science Master’s Program” in red ink on the front of the envelope. Please enclose a

self-addressed envelope (rectangular No. 2 size, 33 cm x 24 cm), with stamps in the amount of 250 yen affixed.

Inquiries:

Administrative Office of the Faculty of Science,
Shizuoka University
836 Ohya, Suruga-ku,
Shizuoka-shi, 422-8529
TEL (054) 238-4861

Information Regarding Entrance Examination Results

Information regarding entrance examinations is available as described below:

1) Internet

Application guidelines are posted on the Department of Science's website.

URL: <http://www.sci.shizuoka.ac.jp/>

2) Disclosure of information regarding entrance examination results

The Graduate Schools of Shizuoka University have a disclosure system for information regarding entrance examinations. Applicants who failed the applicable examinations for entrance may ask to see the results of these examinations in the period between November 15, 2018 (Thursday) and December 17, 2018 (Monday). More information may be requested from the Graduate School Unit, Educational Affairs Section Student Affairs Division :

Graduate School Unit, Educational Affairs Section Student Affairs Division

836 Ohya, Suruga-ku, Shizuoka-shi, 422-8529

TEL: 054-238-4332

3) Archived examinations

Previous Department of Science entrance examinations may be accessed in the entrance examination reading room of the Student Affairs Division or the Student Affairs Unit of the Faculty of Science.

How We Handle Personal Information

Pursuant to the Act for the Protection of Personal Information Collected by Independent Administrative Institutions, and in conformity with the Shizuoka University Personal Information Management Regulations, we handle personal information as described below.

1) Personal information from application documents and examination results used in the selection of students will be used (a) for the purpose of selecting students (i.e., application handling and selection), (b) in announcing results of examinations, (c) during registration, and (d) as part of investigations and research into improving student selection methods and the education offered by the university.

2) Personal information about students who have entered the university will be used

for (a) school affairs (school register, student counseling, etc.), (b) student support (health management, exemptions from tuition and scholarship applications, support in finding jobs, etc.), (c) procedures for collecting tuition fees, and (d) as part of investigations and research into improving student selection methods and the education offered by the university.

Students Who Need to Extend Their Years of Study

This extension system is for students who are unable - mainly because of employment - to complete the Graduate School program in the usual time allotted (2 years for the Master's programs). Students may be permitted, upon request, to submit a plan to extend their course of studies for up to 4 years for the Master's programs, and to have tuition adjusted during the extension period. Note that permission is not automatic and each case will be considered on its merits. Further information regarding this system may be requested from the Administrative Office of the Faculty of Science.

Special Consideration for Entrance Examination Provisions for Applicants with Disabilities

Disabled applicants who require special consideration when taking the entrance examination (or in any circumstances during the course of their studies) should request the Department of Science prior to submitting their application, using the procedure outlined in the chart below. Applicants will be contacted regarding the outcome of such consultation once a decision has been made.

It is recommended that such applicants visit the campus to observe the layout of facilities, terrain, etc. prior to submitting their application.

Contact Period	In principle, one month prior to the application deadline
Procedure	Please submit an “Application for Special Consideration for Graduate School Entrance Examination Provisions” and attach a copy of the Disabled Persons Booklet containing your physical disability certificate or doctor’s certificate. When necessary, interviews may be held with the applicant or a person capable of speaking on behalf of the applicant (guardian, person from the applicant’s undergraduate university, etc.).
Contact Details	Administrative Office of the Faculty of Science, Shizuoka University 836 Ohya, Suruga-ku, Shizuoka-shi, 422-8529 TEL 054-238-4861 FAX 054-237-9895

Note:

1. In the event of making inquiries to the above address or requesting copies of the “Application for Special Consideration for Graduate School Entrance Examination Provisions” by mail, please enclose a self-addressed (name, address, postcode) reply envelope (rectangular No. 3 size, 23.5 cm x 12 cm), affixed with stamps in the amount of 82 yen.
2. Please note that telephone inquiries and the hand delivering of “Application for Special Consideration for Graduate School Entrance Examination Provisions” forms will not be accepted on Saturdays, Sundays or non-working days.

**Graduate School of Integrated Science and Technology
(Master's Course) Department of Science**

The annotation ① specifies academic advisers scheduled for retirement on March 31, 2020;

The annotation ② specifies academic advisers scheduled for retirement on March 31, 2021;

Academic advisers with an annotation, *, teach in the radioscience educational program.

Course	Academic Staff			Research Area		
Mathematics	M 1	Prof.	②Hideto Asashiba	Fundamental Mathematics	Algebra (Representation Theory of Algebras)	M 1
	M 2	Prof.	Nobu-yuki Suzuki		Mathematical Logic (Nonclassical Logic)	M 2
	M 3	Prof.	Izuru Mori		Algebra (Noncommutative Algebraic Geometry)	M 3
	M 4	Associate Prof.	Hironori Kumura		Differential Geometry (Global Analysis)	M 4
	M 5	Associate Prof.	Tetsuya Hosaka		Geometry (Geometric Group Theory)	M 5
	M 6	Associate Prof.	Teruyuki Yorioka		Mathematical Logic (Axiomatic Set Theory)	M 6
	M 7	Lecturer	Kyouko Kimura		Algebra (Combinatorial Commutative Algebra)	M 7
	M 8	Lecturer	Diego A. Mejia		Mathematical Logic (Infinite Combinatorics)	M 8
	M 9	Prof.	Naoki Tanaka	Mathematical Analysis	Real Analysis (Semigroups of Operators and Evolution Equations)	M 9
	M 10	Prof.	Toshitaka Mastumoto		Functional Analysis (Abstract Nonlinear Evolution Equations)	M 10
	M 11	Lecturer	Misako Yokoyama		Topology (Topology of Orbifolds)	M 11
	M 12	Lecturer	Masanori Adachi		Complex Analysis (Complex Analytic Geometry)	M 12
Physics	P 1	Prof.	②Akihiko Matsuyama	Fundamental Physics	Intermediate Energy Nuclear Physics	P 1
	P 2	Prof.	Makoto Tomita		Quantum Optics, Quantum Electronics	P 2
	P 3	Prof.	Shin-ichi Sato		Mathematical Methods in Physics, Nonlinear Physics	P 3
	P 4	Prof.	Junji Suzuki		Statistical Physics	P 4
	P 5	Prof.	Masashige Matsumoto		Condensed Matter Physics	P 5
	P 6	Prof.	Asato Tsuchiya		Particle Theory	P 6
	P 7	Associate Prof.	Kaori Kaki		Theoretical Nuclear Physics (Reaction Theory)	P 7
	P 8	Lecturer	Takeshi Morita		Particle Theory	P 8
	P 9	Asst. Prof.	Tatsuro Yuge		Nonequilibrium Physics	P 9
	P 10	Prof.	Tetsu Mieno	Applied Physics	Experiments in Plasma Science, Carbon Cluster Science & Space Science	P 10
	P 11	Prof.	Masahito Yamazaki		Biophysics of Biomembranes	P 11
	P 12	Associate Prof.	Daisuke Shimada		Condensed Matter Physics, Superconductivity	P 12
	P 13	Associate Prof.	Takao Ebihara		Physics of Heavy Fermion System	P 13
	P 14	Associate Prof.	Toshihiko Oka		Biophysics of Proteins	P 14
	P 15	Associate Prof.	Kazuki Bando		Semiconductor Photophysics	P 15
Chemistry	C 1	Prof.	Masahiro Uritani	Structural Chemistry	Biochemistry of Environmental Response, Signal Transduction	C 1
	C 2	Prof.	Kenkichi Sakamoto		Organic Chemistry of Main-Group Elements, Physical Organic Chemistry	C 2
	C 3	Prof.	Toshiaki Okabayashi		Molecular Spectroscopy, Structural Chemistry	C 3
	C 4	Prof.	Ayumu Yamamoto		Molecular Cell Biology and Biochemistry	C 4
	C 5	Associate Prof.	Shinnosuke Kawai		Physical Chemistry, Reaction Dynamics	C 5
	C 6	Associate Prof.	Yoshiteru Matsumoto		Cluster Science, Laser spectroscopy	C 6
	C 7	Associate Prof.	Takanori Oyoshi		Nucleic Acids Chemistry, Chemical Biology	C 7
	C 8	Lecturer	Makoto Moriya		Coordination Chemistry, Molecular Ionics	C 8
	C 9	Prof.	Kenji Kobayashi	Functional Chemistry	Molecular Self-Assembly, Supramolecular Chemistry	C 9
	C 10	Prof.	Mitsuru Kondo		Synthesis of New Functional Metal Complexes	C 10
	C 11	Prof.	Rika Sekine		Quantum Chemistry, Computational Chemistry	C 11
	C 12	Associate Prof.	Chika Kato		Inorganic Chemistry, Catalytic Chemistry	C 12
	C 13	Associate Prof.	Masamichi Yamanaka		Supramolecular Chemistry, Synthetic Organic Chemistry	C 13
	C 14	Associate Prof.	Naofumi Tsukada		Organic Synthesis, Metal Complex Catalyst	C 14
	C 15	Associate Prof.	*Makoto Yanaga		Trace Elements in Living Organisms, Nuclear Methods of Analysis	C 15
	C 16	Associate Prof.	*Yasuhisa Oya		Chemistry of β -Emitters, Chemistry for Nuclear Energy Systems	C 16
	C 17	Lecturer	*Takumi Chikada		Materials Chemistry for Advanced Energy Systems, Radiochemistry	C 17
	C 18	Lecturer	Naoko Nishina		Organometallic Chemistry, Catalytic Chemistry	C 18

Course		Academic Staff		Research Area		
Biological Science	B 1	Associate Prof.	Akiko Kozaki	Plant Biology	Plant Molecular Biology	B 1
	B 2	Associate Prof.	Toyoki Amano		Plant Protein Engineering	B 2
	B 3	Associate Prof.	Toru Tokuoka		Plant taxonomy: Molecular Phylogeny and Embryology	B 3
	B 4	Associate Prof.	Koichiro Awai		Molecular physiology of lipids in photosynthetic organisms	B 4
	B 5	Lecturer	Rei Narikawa		Photobiology of photosynthetic organisms	B 5
	B 6	Prof.	②Kiyoshi Yamauchi	Regulatory Biology	Environmental and Molecular Endocrinology	B 6
	B 7	Prof.	Taketomo Fujiwara		Nitrifying and Denitrifying Microbes, Biochemistry of Haloarchaea	B 7
	B 8	Prof.	Hiro-aki Takeuchi		Animal Behavior and Nervous System	B 8
	B 9	Prof.	Masakazu Suzuki		Endocrinology, Gene Expression, Evolution, Adaptation	B 9
	B 10	Associate Prof.	Akinori Ishihara		Molecular Biology, Bioinformatics	B 10
	B 11	Associate Prof.	Makoto Kusakabe		Osmoregulation, Comparative Endocrinology	B 11
	B 12	Lecturer	Reiko Okada		Animal Physiology and Biochemistry	B 12
	B 13	Prof.	②Nobuyoshi Shiojiri	Cell and Developmental Biology	Organogenesis, Tissue Interactions, Signal Transduction, Regenerative Medicine	B 13
	B 14	Prof.	Takashi Ushimaru		Regulation of Cell Growth and Cell Proliferation	B 14
	B 15	Prof.	Toshinobu Tokumoto		Reproductive Biology	B 15
	B 16	Associate Prof.	Hideo Doura		Molecular and Cellular Biology of Symbiosis	B 16
	B 17	Lecturer	Toru Koike		Developmental Biology, Cell Biology	B 17
Geosciences	G 1	Prof.	①Yuichi Morishita	Geodynamics	Ore Geology, Isotope Geology and SIMS	G 1
	G 2	Associate Prof.	Hidemi Ishibashi		Petrology, Volcanology	G 2
	G 3	Associate Prof.	Ryoya Ikuta		Seismology, Geodesy and Geophysics	G 3
	G 4	Lecturer	Kenichi Hirauchi		Structural geology, Experimental petrology	G 4
	G 5	Lecturer	Yuta Mitsui		Solid Geophysics	G 5
	G 6	Prof.	Akira Tsukagoshi	Biogeosphere Science	Biodiversity and Evolution	G 6
	G 7	Prof.	Akihisa Kitamura		Quaternary Paleoenvironment	G 7
	G 8	Prof.	Shin-ichi Sato		Paleoecology	G 8
	G 9	Prof.	Hiroyuki Kimura		Earth Microbiology, Environmental Genomics	G 9
	G 10	Associate Prof.	Rumi Sohrin		Marine Biogeochemistry and Aquatic Microbial Ecology	G 10
	G 11	Associate Prof.	Yutaro Suzuki		Paleobiology, Functional Morphology	G 11
	G 12	Associate Prof.	Dur Gaël		Plankton Ecology	G 12
	G 13	Asst. Prof.	Masayuki Ikeda		Paleoclimatology • Paleooceanography	G 13
	G 14	Asst. Prof.	Atsushi Kubo		Biogeochemistry	G 14

Introduction to the Master's programs – Department of Science

Teachers and main researches currently available

Notes

1) Before applying, you are encouraged to contact the academic adviser with whom you wish to work with.

2) The annotation ① specifies academic advisers scheduled for retirement on March 31, 2020;

The annotation ② specifies academic advisers scheduled for retirement on March 31, 2021;

Academic advisers with an annotation, *, teach in the radioscience educational program.

【Mathematics】

Fundamental Mathematics

Name	Title	Research Area
②Hideto Asashiba	Prof.	Representation theory of algebras: Derived equivalence classification of self-injective algebras, and bicategorical covering theory of linear categories under category actions.
Nobu-Yuki Suzuki	Prof.	Mathematical logic: Semantics of non-classical logics including super-intuitionistic and modal predicate logics.
Izuru Mori	Prof.	Noncommutative algebraic geometry: Classification of noncommutative algebraic surfaces.
Hironori Kumura	Associate Prof.	Differential geometry: Study of the structure of manifolds and mappings.
Tetsuya Hosaka	Associate Prof.	Geometric group theory: CAT(0) spaces, groups acting on CAT(0) spaces, Coxeter groups.
Teruyuki Yorioka	Associate Prof.	Mathematical logic, in particular, combinatorics on $P(\omega)/\text{fin}$ and the real line, and forcing theory.
Kyouko Kimura	Lecturer	Stanley-Reisner ideals: Study of the arithmetical rank and minimal free resolutions.
Diego A. Mejia	Lecturer	Mathematical logic: Combinatorics of the real line and forcing theory.

Mathematical Analysis

Name	Title	Research Area
Naoki Tanaka	Prof.	Semigroups of operators and evolution equations.
Toshitaka Matsumoto	Prof.	Abstract nonlinear evolution equations and their applications to partial differential equations.
Misako Yokoyama	Lecturer	Study of the topological structures and the algebraic invariants of orbifolds.
Masanori Adachi	Lecturer	Complex analytic geometry: complex analysis on weakly pseudoconvex domains in complex manifolds

【Physics】

Fundamental Physics

Name	Title	Research Area
②Akihiko Matsuyama	Prof.	Theoretical study of nuclear structure and reaction in the intermediate energy region.
Makoto Tomita	Prof.	Propagation and radiation of light in nano, micro, structure complex media; including microsphere, random or periodic dielectric structures.
Shin-ichi Sato	Prof.	Pattern forming phenomena in nonequilibrium systems; Dendritic growth and surface roughening. Chaos in nonlinear systems.
Junji Suzuki	Prof.	Integrable systems in statistical mechanics and field theories.
Masashige Matsumoto	Prof.	Theoretical study of condensed matter physics.
Asato Tsuchiya	Prof.	Particle physics and cosmology. Especially, nonperturbative aspects of quantum field theory, string theory and quantum gravity.
Kaori Kaki	Associate Prof.	Nuclear reaction theory in relativistic framework.
Takeshi Morita	Lecturer	Theoretical physics. Especially, string theory, gauge theory and quantum aspects of gravity.
Tatsuro Yuge	Assistant Prof.	Nonequilibrium physics. Interplay between nonequilibrium and many-body effects.

Applied Physics

Name	Title	Research Area
Tetsu Mieno	Prof.	Production, analysis and application of nano-particles and carbon clusters (nanotubes, fullerenes, etc.). Experimental study of plasma science & space environment.
Masahito Yamazaki	Prof.	Biophysics of biomembranes. Dynamics and function of biomembranes and proteins. The single GUV method. Peptides/proteins-induced pore formation. Cubic phases of membranes. Force-induced unfolding. Development and analysis of artificial cells and systems of life.
Daisuke Shimada	Associate Prof.	Study on superconducting mechanism of cuprate and Fe-based superconductors.
Takao Ebihara	Associate Prof.	Crystal growth and electrotransport measurement in heavy Fermion system.
Toshihiko Oka	Associate Prof.	Biophysics of proteins. Studies of dynamics and properties of proteins with X-ray crystallography, small-angle X-ray scattering and other methods.
Kazuki Bando	Associate Prof.	Photophysics and quantum optics in semiconductor systems including organic and inorganic semiconductors and their quantum nanostructures.

【Chemistry】

Structural Chemistry

Name	Title	Research Area
Masahiro Uritani	Prof.	Biochemical study of environmental response, especially focused on TOR protein kinase and its signal transduction system.
Kenkichi Sakamoto	Prof.	Organosilicon chemistry: Synthesis, reactions, and properties
Toshiaki Okabayashi	Prof.	High resolution spectroscopy for transient species
Ayumu Yamamoto	Prof.	Study on molecular mechanisms regulating chromosome dynamics and structures.
Shinnosuke Kawai	Associate Prof.	Study on effective coordinates to describe polyatomic systems.
Yoshiteru Matsumoto	Associate Prof.	Study on intermolecular interactions and vibrational analysis of molecular clusters by laser spectroscopy.
Takanori Oyoshi	Associate Prof.	Studies on DNA and RNA local conformations and its binding proteins.
Makoto Moriya	Lecturer	Molecular ionics using supramolecular assemblies.

Functional Chemistry

Name	Title	Research Area
Kenji Kobayashi	Prof.	Structure and function of self-assembled materials and supramolecules via hydrogen bonds & heteroatom interactions.
Mitsuru Kondo	Prof.	Synthesis and reactivity of new functional metal complexes.
Rika Sekine	Prof.	Quantum chemistry of structure, properties, and reactions for molecules, cluster and (surface of) solids.
Chika Kato	Associate Prof.	Synthesis, structural analysis, and catalysis of metal oxide clusters, metal complexes, and inorganic porous materials.
Masamichi Yamanaka	Associate Prof.	Construction and exploration of function in capsule shaped molecule. Development of functionalized supramolecular gel.
Naofumi Tsukada	Associate Prof.	Organic synthesis using transition metal complexes as catalyst.
*Makoto Yanaga	Associate Prof.	Studies on behavior of trace metal elements in living organisms by means of radioscientific techniques.
*Yasuhisa Oya	Associate Prof.	Elucidation of interaction mechanism between materials and β -emission nuclides including tritium, and its application for nuclear energy systems.
*Takumi Chikada	Lecturer	Study on hydrogen isotope behaviors in materials and material development for advanced energy systems.
Naoko Nishina	Lecturer	Catalytic study of organometallic complexes.

【Biological Science】

Plant Biology

Name	Title	Research Area
Akiko Kozaki	Associate Prof.	Mechanism of flowering, regulation of oil synthesis in seed and growth regulation by nutrition signals.
Toyoki Amano	Associate Prof.	Regulation mechanism of protein turnover in chloroplasts, characterization of ATP-dependent proteases using protein engineering.
Toru Tokuoka	Associate Prof.	Plant taxonomy; molecular phylogeny and embryology of angiosperms.
Koichiro Awai	Associate Prof.	Molecular physiology of lipids in the photosynthetic membranes. Production of useful compounds and molecular mechanisms of stress responses in photosynthetic organisms.
Rei Narikawa	Lecturer	Studies on photoresponsive systems of photosynthetic organisms from molecular level to ecological level. Development of light switches and fluorescent probes based on photoreceptors.

Regulatory Biology

Name	Title	Research Area
②Kiyoshi Yamauchi	Prof.	Molecular mechanisms of thyroid hormone and environmental chemicals with hormone-like and anti-hormone activities.
Taketomo Fujiwara	Prof.	Molecular and ecological studies on nitrifying and denitrifying microbes. Molecular mechanism of haloadaptation in extremely halophilic archaea.
Hiro-aki Takeuchi	Prof.	Neuroethological analysis of instinctive behavior, learning and memory in vertebrates.
Masakazu Suzuki	Prof.	Molecular mechanisms for endocrine regulation, adaptation, the development of endocrine organs, and hormone gene expression.
Akinori Ishihara	Associate Prof.	Analysis of the effect of endocrine-disrupting chemicals on thyroid system.
Makoto Kusakabe	Associate Prof.	Evolution and diversification of osmoregulatory ability in fishes
Reiko Okada	Lecturer	Effects of developmental and environmental changes on regulatory mechanisms of vertebrates.

Cell and Developmental Biology

Name	Title	Research Area
②Nobuyoshi Shiojiri	Prof.	Cellular and molecular analyses of murine liver development and regeneration, and of pattern formation in avian plumage coloration by using transgenic and knockout animals.
Takashi Ushimaru	Prof.	Cellular biology of cell growth and cell proliferation. Key words: DNA replication, Mitosis and TOR (target of rapamycin) signaling.
Toshinobu Tokumoto	Prof.	Molecular mechanism of oocyte maturation and fertilization in fish and frogs. Non-genomic steroid actions through the steroid membrane receptors.
Hideo Doura	Associate Prof.	Studies on symbiosis between Paramecium and intra-nuclear symbiont Holospora and between P. bursaria and symbiotic Chlorella.
Toru Koike	Lecturer	Mechanism of early liver development. Characterization of hepatoblasts and liver progenitor cells.

【Geosciences】

Geodynamics

Name	Title	Research Area
①Yuichi Morishita	Prof.	Ore geology and isotope geology: Studies on mineral deposits by means of gas isotope ratio mass spectrometry and secondary ion mass spectrometry.
Hidemi Ishibashi	Associate Prof.	Physical and chemical properties, formation processes and eruption dynamics of magma.
Ryoya Ikuta	Associate Prof.	Active monitoring of crustal stress state using artificial vibration sources. Developing a new method to detect crustal deformation on ocean bottom.
Ken-ichi Hirauchi	Lecturer	Elucidation of rheology of materials at subduction plate boundary by means of deformation experimental apparatus.
Yuta Mitsui	Lecturer	Mechanism of Earth's deformation by Geodetic, Seismological, and Physical modeling

Biogeosphere Science

Name	Title	Research Area
Akira Tsukagoshi	Prof.	Natural history of Ostracoda (Crustacea: Arthropoda). Animal evolution based on taxonomy and comparative anatomy.
Akihisa Kitamura	Prof.	Analyses of Quaternary paleoenvironment in shallow water around Japan and marine ecosystem response to the global warming.
Shin'ichi Sato	Prof.	Actuopaleoecology of bivalves faced large environmental disturbances caused by human activities.
Hiroyuki Kimura	Prof.	Ecology of microorganisms inhabiting marine, hot spring, and subsurface environments. Earth microbiology associated with material cycles, global warming, and energy production.
Rumi Sohrin	Associate Prof.	Biogeochemical cycling in marine environment, especially for the interaction among microbes, organic matter and trace metals.
Yutaro Suzuki	Associate Prof.	Reconstructing biological characteristics of fossil marine animals based on the examinations of fossil morphology from the aspects of comparative morphology and biomechanics.
Dur Gaël	Associate Prof.	Plankton ecology. Adaptive and evolutionary strategy of zooplankton to global changes.
Masayuki Ikeda	Assistant Prof.	Mesozoic Earth system dynamics and biotic evolution-recovery-extinction driven by astronomical forcing.
Atsushi Kubo	Assistant Prof.	Biogeochemical cycling in coastal waters and freshwaters, especially for carbon dioxide budget in coastal waters.

The “Radioscience Educational Program”

The Radioscience Educational Program that will be offered to all students of Physics, Chemistry, Biological Science, and Geosciences, has the aim of educating students to become high-level professionals with a broad knowledge of radioscience in addition to their specialized knowledge in their own fields. In other words, it cultivates the students’ abilities to (1) develop new radionuclides and new uses for radiation—skills which are in demand in other fields besides science research—and (2) to do basic research to find appropriate solutions to the problems of modern society—for example, problems that arise from the use of nuclear energy. Ultimately, the program prepares students to meet the needs of society as they become leaders in respective fields.

After enrolling, students who wish to take this program shall consult their division advisers and sub-advisers (depending on research topics) for information on registering for the program.

Note: Academic advisers of this program are shown with an annotation, *, in “The Graduate School of Science: an outline” (pages 19 & 20) and the “Introduction to departmental majors” (pages 21 to 25)

