

Academic Year 2017
Graduate School of Science
Hokkaido University

Doctoral Course
(Second Part of Doctoral Program)

First Selection of 2017

Guidelines for Application for the
Entrance Examination

For enrollment October 2016 or April 2017
(Admission for International Students in Japan)

June 2016

Note

Applicants for the Department of Natural History Sciences must submit either TOEFL (iBT or PBT) or TOEIC Public Testing original scores.

The copy of score sheet is disapproved.

Based on the application period, check the test schedule of TOEFL and TOEIC respectively.

Hokkaido University's Acquisition and Use of Personal Information

- (1) In handling personal information from applicants, Hokkaido University makes every effort to protect this information through appropriate management based on the "Privacy Policy of Hokkaido University" and relevant laws and ordinances such as the "Protection Law for Private Information Held by Independent Administrative Corporations."
- (2) Personal information, such as name, address, etc., provided by applicants to the university in the process of applying for admission will be used only for 1) assessment of applicants, 2) the announcement of results, 3) enrollment procedures, 4) surveys and research on enrollee selection methods, and 5) business operations pertaining to 1-4.
- (3) Companies commissioned as part of the relevant operations by the university (hereafter called "commissioned companies") may handle personal data. Part or all of the personal information submitted to the university by applicants will be provided to the commissioned companies, to the extent necessary for them to carry out their commissioned operations.
- (4) After successful applicants are enrolled, personal information they provided on their application forms will be used for 1) educational affairs (such as registration, educational guidance, etc.), 2) student support services (such as health administration, fellowship applications, etc.), and 3) business operations related to their tuition fees and other expenses.
- (5) Regarding the personal information in (4), only the name and address can be used for contact from 1) Hokkaido University Frontier Foundation, 2) Hokkaido University Athletic Union, and 3) the Alumni Association of the School of Science, Hokkaido University.

June 2016

Graduate School of Science,
Hokkaido University

Admission Requirements for the Graduate School of Science

Applicants must have completed core subjects in the fields of Mathematics, Physics, Chemistry, Biological Sciences, Earth Science, etc., and related specialized subjects. They must also have the ability, character and aptitude to study independently and to rigorously investigate the principles of nature.

General Category and Special Category for Working Applicants

1. Admission Quota

Department	Admission Quota		Website's URL
	October, 2016	April, 2017	
Mathematics	A few students	17	http://www.math.sci.hokudai.ac.jp/en/
Condensed Matter Physics	A few students	10	http://phys.sci.hokudai.ac.jp/quantum/index-e.html
Cosmosciences	A few students	9	http://www.ep.sci.hokudai.ac.jp/~cosmo/index-e.htm
Natural History Sciences	A few students	20	Earth and Planetary Dynamics/ Earth and Planetary System Science/ Seismology and Volcanology http://www.sci.hokudai.ac.jp/grp/epsdc/exam/ Biodiversity http://www.sci.hokudai.ac.jp/biodiversity/English.html Science Communication http://museum-sv.museum.hokudai.ac.jp/activity/education/sicom/English.html
Total		56	

Notes

- ①. For details about a department, please inquire to the department concerned.
- ②. Applicants to the Department of Natural History Sciences should choose either 1) Earth and Planetary Dynamics / Earth and Planetary System Science / Seismology and Volcanology, 2) Biodiversity, or 3) Science Communication, and check the appropriate box on the Application Form.
- ③. This admission quota includes working and international applicants in each department. Those who wish to enroll while continuing their employment may apply under the Special Category for Working Applicants.
- ④. Some departments will organize a fall selection and a second selection; the entrance examination for the fall selection will be conducted in mid-November, and that for the second selection will be conducted in early February.

2. Eligible Applicants

Applicants must fulfill one of the following criteria.

- (1) Received or are expected to receive a Master's degree or a professional degree (a professional degree as stipulated in Article 5-2 of the Degree Regulations [1953 Education Ministry Ordinance No. 9] in conformity with Article 104, Clause 1, of the School Education Law), prior to admission to the Graduate School.
- (2) Received or are expected to receive a degree equivalent to a Master's degree or a professional degree at an overseas institution, prior to admission to the Graduate School.
- (3) Completed or are expected to complete an overseas distant leaving course in Japan and received a degree

equivalent to a Master's degree or a professional degree at an overseas institution, prior to admission to the Graduate School.

- (4) Completed or are expected to complete, prior to admission to the Graduate School, a school education course at an institution in Japan that is recognized by the educational system of an overseas country as having graduate school courses and is designated by the Ministry of Education, Culture, Sports, Science and Technology, and was awarded a Master's degree or a professional degree.
- (5) Received or are expected to receive, prior to admission to the Graduate School, a degree equivalent to a Master's degree from the United Nations University which was promulgated by the General Assembly of the United Nations on December 11, 1972 and in accordance with the Agreement between Japan and the United Nations concerning the Act on Special Measures Incidental to Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University [1976, Resolution 72, Article 1, Item 2].
- (6) Completed or are expected to complete, prior to admission to the Graduate School, a formal education by taking a correspondence course through a non-Japanese university, an educational institution as designated in (4), or the United Nations University; passed an examination or screening equivalent to that specified in the regulations in Article 16-2 in Standards for the Establishment of Graduate Schools; and be recognized by the Graduate School as having reached an academic level equivalent to a Master's degree holder.
- (7) Designated by the Ministry of Education, Culture, Sports, Science and Technology (Ministry of Education Notification No. 118/1989).
 - ① Engaged in research at a university and/or a research institute for two years or longer after graduation from university, and be recognized by the Graduate School as having reached an academic level equivalent to or higher than that of a Master's degree holder, based on research results.
 - ② Completed a 16-year overseas school education course, or an overseas correspondence course in Japan equivalent to a 16-year school education course in the country concerned, and subsequently engaged in research at a university and/or a research institute for two years or longer, and be recognized by the Graduate School as having reached an academic level equivalent to or higher than that of a Master's degree holder, based on research results.
- (8) Be recognized by the Graduate School as having reached an academic level equal to or higher than that of a Master's degree holder or a professional degree holder, as verified by the individual admission qualification screening, and be at least age 24 before admission to the Graduate School.

Notes:

Applicants who wish to enroll in October 2016 must indicate this by checking the appropriate box on the application form.

Applicants for the Department of Mathematics must satisfy the above requirements by the end of September 2016 (including those who expect to satisfy the above requirements). Those expecting to satisfy the above requirements by the end of March 2017 must apply for a secondary selection planned for early February 2017.

3. Pre-assessment of Applicants' Qualifications

Application Period for Pre-assessment: July 1 – July 5, 2016

The Pre-assessment of Applicants' Qualifications is held prior to the application period for the entrance examination. **Applicants under (7) or (8) in "2. Eligible Applicants"** must apply for this by submitting "5. Application Documents" during the above period.

Applicants who apply for the Pre-assessment of Applicants' Qualifications should not pay the entrance examination fee when they apply for the pre-assessment. They should pay the entrance examination fee after referring to the notes below. The Graduate School Educational Affairs Section is open from 9:00 AM – 4:00 PM, except on Saturdays, Sundays, and national holidays; if you mail the documents, they must be received by the deadline.

Notes:

The pre-assessment application results will be sent by mail to applicants around July 12, 2016; once their qualifications have been accepted by the pre-assessment, applicants must pay the examination fee, referring to "7. Entrance Examination Fee," and submit the payment certificate (E) during "4. Application Period." If the Educational Affairs Section does not receive the payment certificate (E) during the application period, the application will not be accepted and will be regarded as canceled.

- Japanese Government (MEXT) scholarship students, students in the State-Sponsored Scholarship Program of the China Scholarship Council, and students having a Hokkaido University President's Fellowship or a Hokkaido University Special Grant for International Students (including those who are expected to receive these scholarships) are not required to pay the examination fee.

4. Application Period

July 28 – August 3, 2016

Applicants under (1) – (6) in "2. Eligible Applicants" must submit "5. Application Documents" with the payment certificate (E) during the application period. Applications will be accepted 9:00 AM – 4:00 PM, except on Saturdays, Sundays, and national holidays. If you mail the application documents, they must be received by the deadline.

5. Application Documents

(1) General Category

Applicants under (7) or (8) in "2. Eligible Applicants" must submit the following documents during the application period for "3. Pre-assessment of Applicants' Qualifications."

In the following chart, "○" indicates documents that must be submitted; "△" indicates documents that must be submitted for those who fall into the following "Remarks".

Documents	Applicants		Remarks
	(1) (2) (3) (4) (5) (6)	(7) (8)	
1 Application Form, Resume, Admission Ticket and Photo Card.	○	○	Prescribed. Applicants who have completed a correspondence course offered by an overseas educational institution or an overseas school education course are required to attach Resume B .

Documents		Applicants		Remarks
		(1) (2) (3) (4) (5) (6)	(7) (8)	
2	Research Plan after enrollment.	○	○	Prescribed.
3	Copy of the Master's thesis.	△		①. Only Master's degree or professional degree holders. ②. Applicants who graduated from the Graduate School of Science, Hokkaido University, are not required to submit this document.
4	Summary of research during the Master's Course (in two A-4 or letter-size pages or less).	△		①. Only applicants expecting to receive a Master's degree. ②. Applicants for the Department of Mathematics are required to submit a summary of their study and research instead of a summary of research.
5	Summary of research experience and copies of research papers.		○	Discretionary format.
6	Certificate of academic research record.		○	Discretionary format. This is a record of research topics and durations certified by the president of a university, head of a research institute or other organization, or a research supervisor.
7	Official Transcript issued by the last graduate school previously attended.	○	○	① Applicants from the Master's Course in the Graduate School of Science, Hokkaido University, are not required to submit this document. ② Applicants under (6), (7) or (8) in "2. Eligible Applicants" are required to submit a transcript issued by the last academic institution (university) previously attended.
8	Official Certificate of Graduation or Expected Graduation issued by the last graduate school previously attended.	○	○	①. Applicants from the Master's Course in the Graduate School of Science, Hokkaido University, are not required to submit this document. ②. Applicants under (7) or (8) in "2. Eligible Applicants" are required to submit an Official Certificate of Graduation issued by the last academic institution (university) previously attended. ③. Applicants under (6) in "2. Eligible Applicants" are required to submit an Official Certificate of Qualifying Examination.
9	Documents to be submitted to particular departments.	△	△	Refer to " (3) Documents to be Submitted to Particular Departments."
10	Self-addressed envelope to receive the admission ticket for the entrance examination.	○	○	Prescribed. Write your name and mailing address on an envelope with a 362-yen stamp attached. If you change your address after applying, please notify the Graduate School Educational Affairs Section, Science and Life Science Administration Department, Hokkaido University.
11	Stickers for notification of the application results and for communication purposes.	○	○	Prescribed. Write your name and mailing address on each sticker. If you change your address after applying, please notify the Graduate School Educational Affairs Section, Science and Life Science Administration Department, Hokkaido University.
12	Recommendation letter(s) issued by the president of the most recent school attended or by relevant faculty members.	△	△	Discretionary format; A-4 or letter-size pages. Only applicants who apply to the Department of Mathematics, Condensed Matter Physics, and CosmoSciences may submit this (optional).
13	Evidence of English proficiency. (the original score sheets of TOEFL, TOEIC*.)	△	△	Applicants who wish to apply for the Department of Natural History Sciences must submit.
14	Self-addressed envelope for notification of the pre-assessment results.		○	Write your name and mailing address on a standard envelope with an 82-yen stamp attached.

Acceptable score sheets are as follows:

- (1) TOEIC Public Testing (The test must have been taken after July 2014)
- (2) TOEFL-iBT or TOEFL-PBT (The test must have been taken after July 2014)

The copy of score sheets are disapproved. TOEFL-ITP, TOEIC-IP and TOEIC-Bridge are not accepted.

(2) Special Category for Working Applicants

Applicants under (7) or (8) in “2. Eligible Applicants” must submit the following documents during the application period for “3. Pre-assessment of Applicants’ Qualifications.”

In the following chart, “○” indicates documents that must be submitted; “△” indicates optional documents that may be submitted in particular cases.

Documents	Applicants		Remarks
	(1) (2) (3) (4) (5) (6)	(7) (8)	
1 Application Form, Resume, Admission Ticket and Photo Card.	○	○	Prescribed. Applicants who have completed a correspondence course offered by an overseas educational institution or an overseas school education course are required to attach Resume B.
2 Certificate of employment issued by a person with authority over personnel administration in the applicant’s workplace.	○	○	Discretionary format. Successful applicants are required to submit written consent (to enroll in the Doctoral Course while continuing their employment) issued by this person, so please obtain consent in advance.
3 Research Plan after enrollment.	○	○	Prescribed.
4 Summary of research experience and copies of research papers.	○	○	Discretionary format.
5 Certificate of academic research record.	○	○	Discretionary format. This is a record of research topics and durations certified by the president of a university, the head of a research institute or other organization, or a research supervisor.
6 Official Transcript issued by the last academic institution previously attended.	○	○	① Applicants from the Master’s Course in the Graduate School of Science, Hokkaido University, are not required to submit this document. ② Applicants under (6), (7) or (8) in “2. Eligible Applicants” are required to submit a transcript issued by the last academic institution (university) previously attended.
7 Official Certificate of Graduation issued by the last academic institution previously attended.	○	○	①. Applicants from the Master’s Course in the Graduate School of Science, Hokkaido University, are not required to submit this document. ②. Applicants under (7) or (8) in “2. Eligible Applicants” are required to submit an Official Certificate of Graduation issued by the last academic institution (university) previously attended. ③. Applicants under (6) in “2. Eligible Applicants” are required to submit an Official Certificate of Qualifying Examination.
8 Specific documents required by particular departments.	△	△	Refer to “(3) Documents to be Submitted to Particular Departments.”

Documents		Applicants		Remarks
		(1) (2) (3) (4) (5) (6)	(7) (8)	
9	Self-addressed envelope to receive the admission ticket for the entrance examination.	○	○	Prescribed. Write your name and mailing address on an envelope with a 362-yen stamp attached. If you change your address after applying, please notify the Graduate School Educational Affairs Section, Science and Life Science Administration Department, Hokkaido University.
10	Stickers for notification of the application results and for communication purposes.	○	○	Prescribed. Write your name and mailing address on each sticker. If you change your address after applying, please notify the Graduate School Educational Affairs Section, Science and Life Science Administration Department, Hokkaido University.
11	Recommendation letter(s) issued by a person with authority over personnel administration in the applicant's workplace, or by a (prospective) research supervisor at the university, research institute, or other organization concerned.	△	△	Discretionary format; A-4 or letter-size pages. Only applicants applying to the Department of Mathematics, Condensed Matter Physics, and CosmoSciences may submit letters (optional).
12	Evidence of English proficiency. (the original score sheets of TOEFL, TOEIC*.)	△	△	Applicants who wish to apply for the Department of Natural History Sciences must submit.
13	Self-addressed envelope for notification of the pre-assessment results.		○	Write your name and mailing address on a standard envelope with an 82-yen stamp attached.

* Acceptable score sheets are as follows:

(1) TOEIC Public Testing (The test must have been taken after July 2014)

(2) TOEFL-iBT or TOEFL-PBT (The test must have been taken after July 2014)

The copy of score sheets are disapproved. TOEFL-ITP, TOEIC-IP and TOEIC-Bridge are not accepted.

(3) Documents to be Submitted to Particular Departments

Department	Documents to be submitted	Remarks
Mathematics	1. Reasons for applying and choice of examination site (prescribed).	Provide the reasons for applying to this department. The mathematics examination will held in both Sapporo and Tokyo. Please circle your choice of examination site after referring to "Examination Sites for the Department of Mathematics" (this is written in Japanese) attached with the admission ticket.

Department		Documents to be submitted	Remarks
Condensed Matter Physics		None.	None.
Cosmosciences		1. Indication of preferred laboratory and field (prescribed).	Select one laboratory you prefer from the List of Supervisors and Research Fields and fill in the laboratory's name.
Natural History Sciences	Earth and Planetary Dynamics Earth and Planetary System Science Seismology and Volcanology	1. Indication of preferred laboratory and field (prescribed).	Select the supervisor you prefer from the List of Supervisors and Research Fields, and fill in his/her name from the list.
	Biodiversity	1. List of preferred supervisors (prescribed).	
	Science Communication	1. List of preferred laboratories or fields (prescribed). 2. Reasons for applying (prescribed).	

6. Submission of Application Documents

Submit to: The Graduate School Educational Affairs Section

Science and Life Science Administration Department

Hokkaido University

Kita-10 Nishi-8, Kita-ku, Sapporo 060-0810, Japan

※If you send your application documents by mail, please indicate “**Application for Graduate School Enclosed**” in red on the envelope and send it by **registered mail**.

7. Entrance Examination Fee 30,000 yen

- ① **Applicants expecting to complete a Master's Course in the Graduate School of Hokkaido University, Japanese Government (MEXT) scholarship students, students in the State-Sponsored Scholarship Program of the China Scholarship Council, and students having a Hokkaido University President's Fellowship or a Hokkaido University Special Grant for International Students (including those who are expected to receive these scholarships), are not required to pay the examination fee.**

*MEXT scholarship students recommended by universities other than Hokkaido University are required to submit a copy of a letter verifying that they have received this scholarship.

- ② Remit the examination fee to the bank or post office account designated by this University, using the payment slip for the entrance examination fee which is enclosed in the application forms, and attach the payment certificate (E) to the appropriate section of the Application Form.
- ③ The examination fee is not refundable except in the following cases:
- If an applicant has not submitted an application, or the application has been rejected prior to the examination, after the examination fee was remitted.
 - If an applicant paid the examination fee twice by mistake.

8. Selection Method

The Graduate School will assess applicants on the basis of evaluation of their Master's thesis or other equivalent materials (e.g., by interview), knowledge of the specified field, foreign language skills, research plan after enrollment, etc.

The academic skills of applicants under the **Special Category for Working Applicants** will be judged by evaluation of applicants' research achievements in practice (e.g., by interview), rather than their academic achievements in specified fields or foreign languages.

Also, starting with the entrance examination for fiscal year 2017 (including the applicants who wish to enroll in October, 2016), applicants in the Department of Natural History Sciences will be selected by considering in the evaluation of the TOEFL (iBT or PBT) or TOEIC Public testing score.

Based on the application period, check the schedule for TOEFL (iBT or PBT) and TOEIC Public Testing respectively.

9. Date & Time of Examination

August 18 and August 19, 2016

Note: Further details regarding the date and time of examination, examination rooms, etc. will be provided along with the admission ticket sent to applicants by the Educational Affairs Section.

Applicants to the Department of Mathematics may take examinations at either the Tokyo site or the Sapporo site (the date of examination at the Tokyo site is August 20, 2016). Please visit the website of the Department of Mathematics [<http://www.math.sci.hokudai.ac.jp/>] for details, or refer to "Examination Sites for the Department of Mathematics" attached to the application documents for this department.

10. Announcement of Application Results

Successful applicants will be announced on the bulletin board on the ground floor of the Graduate School of Science (large lobby inside north entrance to Building 2), Hokkaido University, **around 4:30 PM on September 1, 2016**. All applicants will also receive the results by mail.

11. Procedures for Enrollment and Payment of Fees

All successful applicants will be notified along with their letter of acceptance about how to proceed with enrollment registration.

Enrollment Fee: 282,000 yen (estimated).

Note: Applicants who are expected to graduate from one of the graduate schools at Hokkaido University are not required to pay the enrollment fee.

Tuition Fee: 267,900 yen [For the first semester. Total annual fee = 535,800 yen] (estimated).

* The above tuition fees are subject to revision at the time of or during your enrollment. In the event of a revision, the revised amounts are immediately applied.

12. Precautions

(1) Make sure to bring your admission ticket and put it on the desk when you take the examination.

- (2) Changes by applicants in the department to which they apply are not accepted for any reason.
- (3) If you have a physical disability that requires special considerations in order for you to take the entrance examination or attend classes, contact the Graduate School Educational Affairs Section at the time of application.

13. Long-term Graduate System

If you wish to take advantage of the Long-term Graduate System established by the Graduate School of Science, please apply after referring to “Information on the Long-term Graduate System”.

14. Other Information

The admission ticket for the entrance examination will be sent to all applicants around August 10, 2016.

◎If you have any questions regarding application procedures, please contact:

Graduate School Educational Affairs Section
Science and Life Science Administration Department
Hokkaido University
Kita-10 Nishi-8 Kita-ku, Sapporo 060-0810, Japan
Tel: (011) 706-3677

Graduate School of Science, Hokkaido University

URL: <http://www.sci.hokudai.ac.jp/english/index.html>

Information on the Long-term Graduate System

1. Aims of the Long-term Graduate System

Under the Long-term Graduate System, a student can request an individual review by the Graduate School and be accepted to complete a course in a planned manner within a period longer than the regular course term (3 years), for certain reasons such as responsibilities of work, or child and family care.

2. Intended Students

Applicants fulfilling one of the criteria below, who want to set a period of study in advance longer than the regular course term to complete an academic (research) course.

- (1) Have a full-time job in a public office or company (excluding people who are exempt from job duty but receive a salary), or are self-employed.
- (2) Have a part-time job that makes it stressful to engage in full-time academic work.
- (3) Are taking care of children or other family members, which makes it stressful to engage in full-time academic work.

3. Attendance Period

The attendance period for the Long-term Graduate System is up to 6 years, and a student can apply for the system by the year. Once the application is accepted, the student can attend school for up to the accepted period. Students can also take a temporary leave of absence from school for up to 3 years.

4. Procedure for Applying for Long-term Graduate Status

(1) Application Period

Please submit complete application documents for the Long-term Graduate System and for the entrance examination together.

(2) Required Documents

- ① Application Form for Long-term Graduate System (Form 1).
- ② Research Plan Under Long-term Graduate System (Form 2).
- ③ Documents that prove that an applicant needs to complete an academic course under the Long-term Graduate System (the format is discretionary).

(3) Announcement of Application Results

The Graduate School individually assesses each application for Long-term Graduate Status, and will notify only applicants who successfully pass the entrance exam of the results.

5. Annual Tuition Fees

The annual tuition fees are determined by the calculation below for every year of the term.

$$\text{Annual tuition fee as a Long-term Graduate Student} = \text{Annual tuition fee for his/her attending year} \times \frac{\text{Regular course term (3 years)}}{\text{Period of his/her accepted Long-term Course (years)}}$$

6. Other Information

For the details regarding the Long-term Graduate System, please contact the Graduate School Educational Affairs Section, Science and Life Science Administration Department, Hokkaido University.

List of Supervisors and Research Fields

As of April 1, 2017

Department of Mathematics, Graduate School of Science

Doctoral Course

Fields	Supervisors		Keywords	Remarks
Algebra	Professor	Masanori Asakura	Arithmetic geometry	
	Professor	Mutsumi Saito	Algebraic analysis, rings of differential operators	
	Professor	Keiji Matsumoto	Special functions	
	Professor	Hiroshi Yamashita	Representation theory	
	Specially Appointed Professor	Hiroaki Terao	Singularity theory, combinatorics	Will retire in March, 2017
	Associate Professor	Noriyuki Abe	Representation theory	
	Associate Professor	Youichi Shibukawa	Yang-Baxter equations and quantum groups	
	Associate Professor	Simona Settepanella	Singularity theory, combinatorics	
	Associate Professor	Kenichiro Tanabe	Vertex algebras, algebraic combinatorics	
	Associate Professor	Daisuke Matsushita	Algebraic geometry	
	Associate Professor	Masahiko Yoshinaga	Algebraic geometry, combinatorics	
Geometry	Professor	Goo Ishikawa	Real algebraic geometry, singularity theory	
	Professor	Katsunori Iwasaki	Complex geometry, dynamical systems, Painleve systems	
	Professor	Toru Ohmoto	Singularity theory, topology	
	Specially Appointed Professor	Shyuichi Izumiya	Geometry, singularity theory	Will retire in March, 2018
	Associate Professor	Toshiyuki Akita	algebraic topology, group cohomology, discrete groups	
	Associate Professor	Shimpei Kobayashi	Differential geometry	
	Associate Professor	Masao Jinzenji	Mathematical physics	
	Associate Professor	Hitoshi Furuhashi	Differential geometry	
Analysis	Professor	Hiroaki Aikawa	Potential theory, real analysis	
	Professor	Asao Arai	Mathematical physics, functional analysis	
	Professor	Hideo Takaoka	Differential equations	
	Professor	Jun Masamune	Global Analysis	
	Professor	Akihito Hora	Functional analysis, probability theory	
	Professor	Naofumi Honda	Algebraic analysis	
	Associate Professor	Masaharu Kobayashi	Harmonic Analysis	
	Associate Professor	Reiji Tomatsu	Operator algebras	
	Associate Professor	Tadahiro Miyao	Mathematical physics, functional analysis, condensed matter physics	
	Applied Mathematics	Professor	Shin-ichiro Ei	Nonlinear analysis, nonlinear partial differential equations
Professor		Hideo Kubo	Partial Differential Equations associated with Nonlinear Dynamics	
Professor		Shuichi Jimbo	Applied analysis, Partial differential equations, Spectral theory	
Professor		Ichiro Tsuda	Complex systems, chaotic dynamical systems, brain theory	
Professor		Masaharu Nagayama	Reaction-diffusion systems, mathematical modeling, numerical simulation	
Professor		Michiko Yuri	Ergodic theory, dynamical systems, complex systems	
Associate Professor		Zin Arai	Dynamical systems, computational topology	
Associate Professor		Akira Sakai	Probability theory, statistical mechanics, mathematical physics	
Associate Professor		Yuzuru Sato	Complex systems, chaotic dynamical systems	
Associate Professor		Takao Namiki	Ergodic theory, dynamical systems, complex systems	
Associate Professor		Kenji Matsumoto	Biophysical complex systems, chaotic dynamical systems	
Associate Professor		Chun Biu Li	Nonequilibrium statistical mechanics, biophysics, time series analysis	

Laboratories	Supervisors		Keywords	Remarks
Electronic Properties of Solids	Professor	Migaku Oda	high-temperature cuprate superconductors, frustrated spin systems, surface & nano-structure magnetism, material research, scanning tunneling microscopy/spectroscopy (STM/STS), spin-polarized STM	
	Associate Professor	Hideo Matsuyama		
	Assistant Professor	Tohru Kurosawa		
	Assistant Professor	Hiroyuki Yoshida		
Electronic Properties of Low-Dimensional Conductors	Specially Appointed Professor	Kazushige Nomura	Low-dimensional organic conductors, scanning tunneling microscopy (STM), scanning tunneling spectroscopy (STS), nonlinear conductivity, symmetry of Cooper pairs, spin density waves (SDWs), chiral superconductivity, mesoscopic systems	Will retire in March 2017
	Associate Professor	Noriaki Matsunaga		
	Assistant Professor	Hiroyoshi Nobukane		
J-Material: Physics of Strongly Correlated Systems	Professor	Hiroshi Amitsuka	J-material, superconductivity, magnetism, heavy fermion, quantum phase transition, magnetoelectric effects, very low temperatures, high magnetic fields, high pressure, ultrasonic measurements, μ SR, neutron scattering, XRS, ferroelectrics, multiferroics, electronic ferroelectricity, phase transition, photoinduced cooperative phenomena	
	Associate Professor	Masaki Takesada		
	Associate Professor	Tatsuya Yanagisawa		
	Assistant Professor	Hiroyuki Hidaka		
Low Temperature Physics	Professor	Atsushi Kawamoto	NMR, strongly-correlated electrom systems, superconductivity, magnetism	
	Lecturer	Yoshihiko Ihara		
	Assistant Professor	Syuhei Fukuoka		
Condensed Matter Dynamics	Associated Professor	Ryusuke Nozaki	microscopic dynamics of condensed matters, dielectric and optical spectroscopy from 1microHz to 10 PHz, Raman scattering, femtosecond pump-probe spectroscopy, terahertz time-domain spectroscopy, solids, complex liquids, hydrogen-bonding systems, semiconductors, nonlinear optical phenomena, biological materials	
	Associated Professor	Tomobumi Mishina		
	Assistant Professor	Sekika Yamamoto		
Statistical Physics	Professor	Koji Nemoto	Statistical physics, non-equilibrium, non-linearity, random systems, complex networks, phase transition, self-organization, critical phenomena, scale-free structures, numerical simulation, Superconductivity, superfluidity, Bose-Einstein condensation, Condensed matter physics, magnetism, multiferroics, heavy fermion	
	Associate Professor	Takafumi Kita		
	Assistant Professor	Koji Okuda		
	Assistant Professor	Satoru Hayami		
mathematical physics	Professor	Shoji Yamamoto	Transition-metal complexes, organic polymers, single-molecule nanomagnets, photoinduced phase transition, optically switchable magnetism, nuclear magnetic relaxation	
	Lecturer	Jun Ohara		

Laboratories	Supervisors		Keywords	Remarks
Nanostructure Physics (RIES)	Professor	Akira Ishibashi	Nano-structured devices, new photovoltaic devices, next-generation solar cells, clean unit system platforms	
	Associate Professor	Kenji Kondo	Quantum field theory, many-body perturbation theory, spintronics devices, magnetism, electronic correlations, Dirac electron, topological insulator	
Phase Transition (RIES)	Specially Appointed Associate Professor	Yuhji Tsujimi	Time domain light scattering, ferroelectrics, quantum ferroelectrics, glass transition, frequency domain light scattering, complex liquids, relaxor ferroelectrics	Will retire in March 2017
Advanced NMR Field of Advanced Functional Materials and Physics (NIMS).	Visiting Professor	Tadashi Shimizu	Solid-state-NMR, highly magnetic fields, condensed matter physics, advanced NMR techniques	
Condensed Matter Theory Field of Advanced Functional Materials and Physics (NIMS).	Visiting Professor	Hiroyuki Yamase	Quantum many-body theory, superconductivity, magnetism, critical phenomena, electronic nematic liquids	
Nanosystem Photonics Field of Advanced Functional Materials and Physics (NIMS)	Visiting Professor	Tadaaki Nagao	Surface physics, nanophotonics, energy conversion, nanomaterials	
Solid State Physics in High Magnetic Field Field of Advanced Functional Materials and Physics (NIMS)	Visiting Professor	Yasutaka Imanaka	Spectroscopy, High magnetic field, Terahertz wave, Quantum Hall effect, Dirac Fermion, Topological insulator	
Muon Spin Resonance Laboratory Field of μ SR Material Science (RIKEN)	Visiting Professor	Isao Watanabe	μ SR material science at the RIKEN-RAL Muon Facility in the UK. Experimental and theoretical studies on the magnetism, superconductivity, industrial applications, non-destructive element analysis, muon hyperfine interactions in metals, insulators and organic molecules. Muon site and magnetic spin structural analysis by the density functional theory.	
Electron Spin Resonance Laboratory Field of ESR Material Science (RIKEN)	Visiting Associate Professor	Yugo Oshima	Electron Spin Resonance (ESR) from X-band to millimeter and sub-millimeter waves, High magnetic field, Strongly-correlated materials, Molecular magnets, Molecular conductors, Spin-Liquid system, Nano-carbon materials.	

Department of CosmoSciences, Graduate School of Science

Doctoral Course

Laboratories	Supervisors		Keywords	Remarks
Observational Astronomy	Associate Professor	Kazuo Sorai	Observational astronomy, extragalactic astronomy, interstellar matter, development of observational instruments and system for the Antarctic THz telescope	
Particle Theory Group	Professor	Hisao Suzuki	Particle physics, beyond the standard model, dark matter, dark energy, grand unified theory, superstrings, supersymmetry, early universe	
	Professor	Tatsuo Kobayashi		
	Associate Professor	Ryuichi Nakayama		
	Specially Appointed Associate	Osamu Seto		
	Lecturer	Kazuhiko Suehiro		
	Assistant Professor	Eun-Kyung Park		
Theoretical Nuclear Physics	Associate Professor	Masaaki Kimura	Quantum many-body problems, nuclear force, unstable nuclei, nucleosynthesis, hadronic matter	
	Lecturer	Wataru Horiuchi		
	Specially Appointed Assistant Professor	Bo Zhou		
Theoretical Astrophysics	Appointed Professor	Asao Habe	Theoretical astronomy, numerical simulations, galaxy formation, galaxy clusters, supermassive black holes, interstellar matter, star formation, interstellar dust	Will move in 2016
	Specially Appointed Professor	Takashi Kozasa		
	Associate Professor	Elizabeth Jane Tasker		
	Assistant Professor	Takashi Okamoto		
	Specially Appointed Assistant	Alexander Pettitt		
Planetary and Space Group	Professor	Kiyoshi Kuramoto	Origin and evolution of planets and satellites, material evolution during planetary system formation, structure and dynamics of Earth and planetary atmospheres, comparative planetology, space exploration and ground-based observation, experimental studies, theory and hierarchical numerical simulation models, applications of information technology	
	Professor	Yukihiro Takahashi		
	Associate Professor	Masaki Ishiwatari		
	Specially Appointed Associate	Junichi Kurihara		
	Specially Appointed Associate	Akihiko Hashimoto		
	Lecturer	Mitsuteru Sato		
	Assistant Professor	Masatsugu Odaka		
	Specially Appointed Assistant	Shunichi Kamata		
	Specially Appointed Assistant	Tetsuro Ihida		

Laboratories	Supervisors		Keywords	Remarks
Astrophysical Chemistry / Ice and Planetary Science	Professor	Akira Kouchi	Interstellar molecules, ice dust, amorphous solid water, surface reactions	
	Professor	Naoki Watanabe		
	Associate Professor	Yuki Kimura		
	Assistant Professor	Hiroshi Hidaka		
	Assistant Professor	Tetsuya Hama		
	Assistant Professor	Yasuhiro Oba		
Phase Transition Dynamics	Professor	Gen Sazaki	Phase transition dynamics, crystal growth, ice, snow, interferometry, advanced optical microscopy, atomic force microscopy	
	Assistant Professor	Ken Nagashima		
	Assistant Professor	Ken-ichiro Murata		
Information Media Science	Professor	Izumi Fuse	Learning science, learning platforms, open education	
	Assistant Professor	Yuichi Yamamoto		
Nuclear Reaction Data Science	Associate Professor	Yoshiharu Hirabayashi	Nuclear data, nuclear reactions, evaluation	Inter-field Cooperation with the Japan Atomic Energy Agency (JAEA) in the field of nuclear data.
	Specially Appointed Assistant	Shuichiro Ebata		
	Visiting Professor	Keiichi Shibata		
	Visiting Professor	Hideo Harada		
	Visiting Professor	Tokio Fukahori		
Spacecraft Observation Group	Visiting Professor	Takehiko Sato	Planetary exploration, infrared astronomy from space, radio astronomy from space	Inter-field Cooperation with Japan Aerospace Exploration Agency (JAXA) in the field of spacecraft
	Visiting Associate Professor	Yasuhiro Murata		
	Visiting Associate Professor	Issei Yamamura		

Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Earth and Planetary Dynamics	Physical Oceanography and Climate	Professor	Shoshiro Minobe	Physical oceanography, meteorology, air-sea interactions, climate variability & change, oceans' role in climate, multidisciplinary challenges, numerical modelling, data analysis	
		Associate Professor	Masaru Inatsu		
		Lecturer	Yoshinori Sasaki		
		Assistant Professor	Hanna Na		
	Physical Hydrology	Specially Appointed Associate Professor	Kazuhisa Chikita	Drainage basins, water and material cycles, sedimentation, lake hydrodynamics	Will retire in March 2017.
	Space Geodesy	Professor	Kosuke Heki	Space geodesy, GNSS, GPS, INSAR, GRACE, gravity, Earth rotation, atmospheric sensing, crustal deformation, glaciology, planetary geodesy, ionosphere	
		Professor	Masato Furuya		
		Associate Professor	Youichiro Takada		
	Seismology	Professor	Kiyoshi Yomogida	Seismic wave propagation, Earth structure, seismic tomography, broadband waveform analysis, lateral heterogeneity and anisotropy	
		Associate Professor	Kazunori Yoshizawa		
Earth and Planetary System Science	Petrology and Volcanology	Professor	Mitsuhiro Nakagawa	Processes of evolution and eruption in magma plumbing systems in volcanos, processes of magma generation and eruption in caldera volcanos, spatial and temporal variation in arc volcanism, long-term forecasting of volcanic activity, mitigation of volcanic disasters	
		Associate Professor	Takeshi Kuritani	Petrological, geochemical, experimental, and theoretical studies for understanding generation, ascent, evolution, and eruption processes of magmas, differentiation processes of the lunar, and evolutionary processes of the Earth.	
		Assistant Professor	Shumpei Yoshimura	Experimental and theoretical studies on igenous and volcanic processes	
	Geochemistry	Professor	Hisayoshi Yurimoto	Geochemistry, cosmochemistry, planetary chemistry, galaxies, stars, planetary systems, protoplanetary disks, planets, meteorites, Earth, core, mantle, crust, oceans, atmosphere, life, magma, geofluids, mass spectrometry, spectroscopy, microscopy, dust formation, crystal growth, high pressure, solar system evolution, planetary exploration	Hokkaido University Museum
		Assistant Professor	Kenichi Bajo		
		Associate Professor	Shogo Tachibana		
		Associate Professor	Junji Yamamoto		
	Earth Materials Science	Professor	Takaya Nagai	Mineralogy, crystallography, crystal growth, physics and chemistry of minerals	
		Associate Professor	Jun Kawano		
	Earth Environmental History · Paleontology	Associate Professor	Yoshitsugu Kobayashi	Vertebrate evolution, dinosaurs, reptiles, birds, phylogenetic relationships, functional morphology, comparative anatomy, embryology	Hokkaido University Museum
		Assistant Professor	Yasuhiro Iba	Evolution of Mesozoic marine biota, paleobiogeographic responses, global environmental change, origin of modern marine biota	

Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Earth and Planetary System Science	Earth System Evolution	Professor	Noriyuki Suzuki	Fate of organic matter in sediments and sedimentary rocks, Earth hydrocarbon resources, long-term carbon cycle, evolution of Earth systems	
		Associate Professor	Ken Sawada	Molecular paleobiology, paleoenvironmental reconstruction, biogeochemistry of geomacromolecules, biomarker paleothermometry, algal biofuels	
		Lecturer	Tsuyoshi Watanabe	High-resolution reconstruction of palaeoenvironments, biogeochemical cycles in reef ecosystems on the geological time scale	
	Geotectonics	Professor	Toru Takeshita	Structural geology, tectonics, rheology, microstructures, metamorphic geology	
		Assistant Professor	Marie Python	Petrography and chemistry of the crust and mantle in ophiolites and the Pacific Ocean, mantle melting, magmatic evolution of the oceanic crust, hydrothermal circulation, interactions within the oceanic crust and mantle	
		Specially Appointed Associate	Makoto Kawamura	Tectonostratigraphy, soft-sediment deformation, clastic composition, forearc geology, accretion tectonics	Will retire in March 2018.
		Associate Professor	Jun Kameda	Subduction zone seismogenesis, water-rock interactions, diagenesis, electron microscopy, clay mineralogy	
Biodiversity	Biodiversity	Associate Professor	Hiroshi Kajihara	Biodiversity I: Marine invertebrates, Nemertea, taxonomy, phylogeny, morphology	
		Associate Professor	Helena Fortunato	Biodiversity I: Mollusks, coralline algae, Bryozoa, calcification patterns, population genetics, ecology, ocean acidification, biogeography	
		Lecturer	Keiichi Kakui	Biodiversity I: Marine invertebrates, Crustacea, Tanaidacea, taxonomy, phylogeny, morphology	
		Professor	Takeo Horiguchi	Biodiversity II: Microalgae, protists, dinoflagellates, phylogeny, endosymbiosis	
		Lecturer	Tsuyoshi Abe	Biodiversity II: Seaweeds, taxonomy, phylogeny, chemotaxonomy	
		Professor	Ryuichi Masuda	Biodiversity IV (Laboratory of Genetic Diversity): Molecular phylogenetics, population genetics, biogeography, mammals, birds	
		Lecturer	Masaki Eda	Laboratory of Archaeozoology & Zooarchaeology: archaeological remains, birds, bones, bone collagen, DNA	
		Assistant Professor	Toru Katoh	Biodiversity I: evolution, phylogeny, populations, insects	
		Professor	Masaoki Takagi	Biodiversity III: Ecology, evolution, island, bird	
		Professor	Kazuhiro Kogame	Biodiversity II: Taxonomy, phylogeny, evolution, seaweeds	

Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Science Communication	Communication of Science and Technology	Associate Professor	Naoyuki Mikami	Sociology, science and technology, public participation, governance and policy, technology assessment	Creative Research Institution.
		Associate Professor	Shishin Kawamoto		CoSTEP
	Philosophy of Science and Technology	Professor	Masahiro Matsuo	Philosophy of science, ethics of science and technology, philosophy of risk, statistical inference of cause	
	Museum Education and Media Studies	Associate Professor	Makiko Yuasa	Museum communication, museum education, museum evaluation, media studies, museum video production	Hokkaido University Museum
		Associate Professor	Yoshiharu Fujita		Creative Research Institution.
	Science Education	Professor	Makoto Suzuki	Self-efficacy, cognitive bias, creativity, human-computer interactions, higher education, educational technology, open education	Creative Research Institution
		Professor	Toshiyuki Hosokawa		
		Associate Professor	Fumihito Ikeda		
		Associate Professor	Kunimasa Yamada		
		Associate Professor	Katsusuke Shigeta		Information Initiative Center, Hokkaido
Seismology and Volcanology	Seismological Observation	Professor	Yuichiro Tanioka	Earthquake source processes, generation and propagation of tsunamis, pre-historical earthquakes and tsunamis, seismic tomography, active fault, earthquake prediction, early warning system, tectonics in northeastern Asia	
		Associate Professor	Kei Katsumata		
		Associate Professor	Hiroaki Takahashi		
		Lecturer	Mako Oozono		
	Ocean Bottom Seismology	Associate Professor	Yoshio Murai	Subsurface structure at subduction zones, elastic wave propagation, tectonics of Northern Mid Atlantic Ridge, subduction earthquake, paleo-seismological analysis, international field science, disaster mitigation	
		Assistant Professor	Yuichi Nishimura	subduction earthquake, paleo-seismological analysis, international field science, disaster mitigation	
	Volcano Physics	Professor	Makoto Murakami	Volcanology, volcanic seismology, eruption prediction, transport processes, volcano hydrology, crustal deformation, space geodesy, geo-electromagnetism, spectroscopy of volcanic plume, volcano monitoring system	
		Associate Professor	Hiromitsu Ooshima		
		Assistant Professor	Hiroshi Aoyam		
	Subsurface Structure	Professor	Takeshi Hashimoto	Subsurface exploration	