

Academic Year 2016
Graduate School of Science
Hokkaido University

Master's Course
(First Part of Doctoral Program)

First Selection of 2016

Guidelines for Application for the
Entrance Examination

For enrollment October 2015 or April 2016
(Admission for International Students Residing in Japan)

June 2015

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, 3) Hokkaido University Clark Memorial Foundation, and 4) the Alumni Association of the School of Science, Hokkaido University.

June 2015

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

>>1. Admission Quota

| Department | Admission Quota | | Website's URL |
|--------------------------|-----------------|-------------|--|
| | October, 2015 | April, 2016 | |
| Mathematics | A few students | 46 | http://www.math.sci.hokudai.ac.jp/en/ |
| Condensed Matter Physics | A few students | 24 | http://phys.sci.hokudai.ac.jp/quantum/index-e.html |
| Cosmosciences | A few students | 20 | http://www.ep.sci.hokudai.ac.jp/~cosmo/index-e.htm |
| Natural History Sciences | A few students | 39 | 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://sc.sci.hokudai.ac.jp/ |
| | | 129 | |

Notes

- ①. For details about a department, please inquire to the department concerned.
- ②. For the Departments of Condensed Matter Physics and Cosmosciences, applicants can apply to both departments in the same year. Please write the names of both departments in the appropriate section on the Application Form.
- ③. Applicants to the Department of Natural History Sciences should choose 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.
- ④. Some departments will conduct 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) Graduated or are expected to graduate from a Japanese college, prior to admission to the Graduate School.
- (2) Received or are expected to receive an undergraduate degree in conformity with Article 104, Clause 4, of the School Education Law (1947, Law No. 26), prior to admission to the Graduate School.
- (3) Completed or are expected to complete a 16-year overseas school education course, prior to admission to the Graduate School.
- (4) Completed or are expected to complete a 16-year course of education in Japan through a correspondence

course offered by an overseas educational institution, prior to admission to the Graduate School.

- (5) Completed or are expected to complete education at an institution in Japan that is recognized as equivalent to a university by a foreign country (limited to individuals who are recognized by a foreign educational system as having completed 16 years of education) and that is designated by the Minister of Education, Culture, Sports, Science, and Technology, prior to admission to the Graduate School.
- (6) Completed a specialized course at a vocational school (limited to courses with a duration of four years or more and that satisfy the conditions set by the Ministry of Education, Culture, Sports, Science and Technology) designated by the Ministry after the date set by the Ministry, prior to admission to the Graduate School.
- (7) Designated by the Ministry of Education, Culture, Sports, Science and Technology (February 7, 1953 Ministry of Education Notification No. 5).
- (8) Have spent three or more years studying at a college or completed a 15-year overseas school education course, and be recognized by the Graduate School as having completed the prescribed number of credits with an excellent academic record.
- (9) Be recognized by the Graduate School as having reached an academic level equivalent to or higher than that of university graduates, as verified by individual admission qualification screening, and be at least age 22 before admission to the Graduate School.

Notes:

Applicants who wish to enroll in October 2015 must indicate this by checking the appropriate box on the application form.

>>3. Pre-assessment of Applicants' Qualifications

Application Period for Pre-assessment: June 22 – June 24, 2015

The Pre-assessment of Applicants' Qualifications is held prior to the application period for the entrance examination. **Applicants under (8) or (9) 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 2, 2015; 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) by July 8, 2015. 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 (including those who are expected to receive these scholarships) are not required to pay the examination fee.

>>4. Application Period

Department of Mathematics: July 3 – July 8, 2015

Departments other than that of Mathematics: July 28 – Aug 3, 2015

Applicants under (1) – (7) in “2. Eligible Applicants”

Submit the completed application documents (see “5. Application Documents”) with the payment certificate (E) (see “7. Entrance Examination Fee”) 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

- Applicants under (8) or (9) 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) | (9) | |
| 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 Official Transcript issued by the last academic institution previously attended. | ○ | ○ | ○ | ①. Applicants from the Bachelor's Course in the School of Science, Hokkaido University, are not required to submit this document. ②. Applicants under (8) in “2. Eligible applicants” should submit a transcript issued by their current academic institution. |
| 3 Official Certificate of Graduation, or Expected Graduation, issued by the last academic institution previously attended; Certificate of Degree Conferral, or Certificate of Expected Degree Conferral. | ○ | ○ | ○ | ①. Applicants from the Bachelor's Course in the School of Science, Hokkaido University, are not required to submit this document. ②. Applicants under (2) in “2. Eligible Applicants” should submit an Official Certificate of Degree (expected) issued by the National Institution for Academic Degrees and University Evaluation (NIAD-UE). |
| 4 Documents certifying that the applicant has academic skills equal to or greater than those of a college graduate. | | | ○ | Discretionary format. e.g., documents detailing international activities, work experience, or language learning experience; research papers; patent publications; certificates of qualification; recommendation letters from supervisors at schools previously attended. |
| 5 Documents to be submitted according to the department applied for. | ○ | ○ | ○ | Refer to “Documents to be Submitted to Particular Departments.” |
| 6 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. |

| Documents | Applicants | | | Remarks | |
|-----------|--|-----|-----|---------|--|
| | (1) (2) (3) (4) (5) (6) (7) | (8) | (9) | | |
| 7 | 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. |
| 8 | Recommendation letter(s) issued by a university previously attended or a dean at a university previously attended. (sealed up) | △ | ○ | △ | Discretionary format, A-4 size pages. ①. Applicants under (8) in “2. Eligible Applicants” should submit these documents. ②. Applicants under (1) – (7) or (9) in “2. Eligible Applicants” and who are applying to the Department of Mathematics, Condensed Matter Physics, or CosmoSciences may submit these documents (optional). |
| 9 | Evidence of English proficiency (the score sheets of TOEFL, TOEIC,..). | △ | △ | △ | Applicants who apply to the Department of Condensed Matter Physics are required to submit this. Applicants who apply to both the Department of CosmoSciences and the Department of Condensed Matter Physics are required to submit this. |
| 10 | 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. |

◎Documents to be Submitted to Particular Departments

| Department | Documents to be submitted | Remarks | |
|--------------------------|---|---|--|
| Mathematics | 1. Reasons for applying and choice of examination site (prescribed). 2. Mathematics report and summary (the summary is a prescribed form). | 1. 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. 2. Report in 10 or fewer A-4 or letter-size pages on the fields you wish to study after admission and on a theorem or theory you are particularly interested in, fully understand, and can explain in detail. In the oral examination, applicants are questioned on the basis of their written report. They must also outline the mathematics report on the prescribed form. | |
| Condensed Matter Physics | 1. List of preferred laboratories or fields (prescribed). | Write your first, second, and third choices of laboratories selected from the List of Supervisors and Research Fields. | |
| CosmoSciences | 1. List of preferred laboratories or fields (prescribed). | Write your first, second, and third choices of laboratories selected from the List of Supervisors and Research Fields. | |
| Natural History Sciences | Earth and Planetary Dynamics Earth and Planetary System Science Seismology and Volcanology | 1. List of preferred laboratories or fields (prescribed). 2. Statement of Purpose (Only the applicants under (8) in “2. Eligible Applicants”) | 1. Write your first and second choices of groups, laboratories, or centers selected from the List of Supervisors and Research Fields. If you do not have a second choice, please leave the section blank. 2. The applicants under (8) in “2 Eligible Applicants” are required to submit this. It should be about 3 A 4 size pages. For example, research activity experience, international activities, work experience or language learning experience. If necessary, attach research paper, patent publications and each certificates of qualification. |
| | Biodiversity | 1. List of preferred supervisors (prescribed). | Write the names of the supervisors you select. |

| | | | |
|--|-----------------------|--|--|
| | Science Communication | 1. List of preferred laboratories or fields (prescribed). 2. Reasons for applying (prescribed). | |
|--|-----------------------|--|--|

***For the Departments of Condensed Matter Physics and CosmoSciences, applicants can apply to both departments in the same year (please submit the “List of preferred laboratories or fields” provided by each department).**

>>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 “**Enclosed Application for Graduate School**” in red on the envelope and send it by **registered mail**.

>>7. Entrance Examination Fee 30,000 yen

- ①. **Japanese Government* (MEXT) scholarship students, students in the State-Sponsored Scholarship Program of the China Scholarship Council, or students having a Hokkaido University President’s Fellowship (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 account or post office account designated by this University, using the attached examination fee transfer form specifically prepared for this purpose, and attach the payment certificate (E) to the appropriate section on the application form.
- ③. The examination fee is not refundable except in the following cases:
- The applicant has not submitted an application, or the application was rejected after the application fee was remitted.
 - The applicant paid the examination fee twice by mistake.

>>8. Selection Criteria

The Graduate School will assess applicants on the basis of their entrance examination (oral and written exams), official transcript, etc.

>>9. Examinations (Written and Oral Exams) in Academic Subjects

Department of Mathematics <Tokyo Site>: August 8, 2015

| | August 8 | |
|-------------|-----------------------------|------------------------------|
| | AM | PM |
| Mathematics | Oral examination (9:00~) | Oral examination (13:00~) |

Department of Mathematics <Sapporo Site>: August 10, 2015

| | August 10 | |
|-------------|-----------------------------|------------------------------|
| | AM | PM |
| Mathematics | Oral examination (9:00~) | Oral examination (13:00~) |

Departments other than that of Mathematics <Sapporo Site>: August 17 and 18, 2015

| | | August 17 | | August 18 | | |
|--------------------------|--|--------------------------------------|---------------------------------------|------------------------------|------------------------------|------------------------------|
| | | AM | PM | AM | PM | |
| Condensed Matter Physics | | Specialized subjects (9:00~11:30) | Specialized subjects (13:00~15:30) | Oral examination (9:00~) | Oral examination (13:00~) | |
| Cosmosciences | | Specialized subjects (9:00~11:30) | Specialized subjects (13:00~15:30) | English (16:00~17:30) | Oral examination (9:00~) | Oral examination (13:00~) |
| Natural History Sciences | Earth and Planetary Dynamics Earth and Planetary System Science Seismology and Volcanology | English (9:30~11:30) | Specialized subjects (13:00~16:00) | | Oral examination (9:00~) | Oral examination (13:00~) |
| | Biodiversity | English (9:00~12:00) | Specialized subjects (13:00~16:00) | | | Oral examination (13:00~) |
| | Science Communication | English (9:00~11:00) | Essays (11:10~12:40) | Oral examination (14:00~) | | |

Notes:

①. English examinations are as follows:

- A Applicants to the Departments of Cosmosciences are required to take an English-Japanese and Japanese-English translation examination.
- B Applicants who apply to the Department of Condensed Matter Physics are required to submit a valid score sheet from one of the tests below (only ORIGINALS will be accepted) at the time of application.
- C Applicants who apply to both Condensed Matter Physics and Cosmosciences are required to submit a valid score sheet from one of the following tests (only ORIGINALS will be accepted) and take the English examination given by the Department of Cosmosciences.

(1) TOEIC Public Testing (The test must have been taken after April 2013).

(2) TOEFL-IBT or TOEFL-PBT (The tests must have been taken after April 2013).

Please note that copies of score sheets are not acceptable and that results from the TOEFL-ITP, TOEIC-IP and TOEIC-Bridge tests are not applicable.

D Department of Natural History Sciences

- Applicants to the Divisions of Earth and Planetary Dynamics, Earth and Planetary System Science, and Seismology and Volcanology must take an English-Japanese and Japanese-English translation examination. Applicants are not permitted to use any dictionary.
 - Applicants to the Division of Biodiversity must take an English-Japanese and Japanese-English translation examination. Applicants are not permitted to use any dictionary.
 - Applicants to the Division of Science Communication must take an English comprehension examination. Applicants are permitted to use an English-Japanese dictionary (excluding electronic devices).
- ②. Applicants for both Condensed Matter Physics and CosmoSciences are required to take a specialized subject examination in Physics and an English examination.
- ③. Applicants for the Astrophysics Laboratory, Theoretical Particle Physics Group, Theoretical Nuclear Physics Laboratory, Information Media Science Laboratory, or Nuclear Reaction Data Science Laboratory of the Department of CosmoSciences must choose physics as the specialized subject for examination. Applicants for the Theoretical Planetary Science Group, Astrophysical Chemistry / Ice & Planetary Science Group, Planetary and Space Group, Phase Transition Dynamics Group, or Spacecraft Observation Group of the Department of CosmoSciences may choose among physics, mathematics, cosmos and planets, and physical chemistry as specialized subjects, and each applicant is required to answer questions from two of these subject areas. The examination will be held on the afternoon of **August 17, 2015**.
- ④. For the Divisions of Earth and Planetary Dynamics, Earth and Planetary System Science, and Seismology and Volcanology in the Department of Natural History Sciences, applicants are required to answer questions from two of five specialized subject areas: mathematics, physics (including optional questions on earth and planetary physics), chemistry (including optional questions on earth and planetary chemistry), earth science I (earth history, tectonics, and sedimentology), and earth science II (lithology, mineralogy, and volcanology).
- ⑤. For the Division of Biodiversity in the Department of Natural History Sciences, a list of keywords indicating the areas covered by the subject examination will be sent to applicants along with the admission ticket for the entrance examination. The list of keywords can also be obtained from the following website:
<http://www.sci.hokudai.ac.jp/biodiversity/> (This list is written in Japanese.)
- ⑥. For their essay examination for the Division of Science Communication in the Department of Natural History Sciences, applicants must choose two of the eight designated topics listed on the following website:
<http://sc.sci.hokudai.ac.jp/examination/thesis> (This list is written in Japanese.)
- ⑦. Applicants to the Department of Mathematics may take examinations at either the Tokyo site or the Sapporo site (the date of examinations at the Tokyo site is August 8, 2015). Please visit the website of the Mathematics Department [<http://www.math.sci.hokudai.ac.jp/> (Japanese)] 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**

3, 2015. All applicants will also receive the results by mail.

>>11. Procedures for Enrollment and Payment of Fees

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

Enrollment Fee: 282,000 yen (estimated).

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

* The above tuition and 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 applicants around following date when the application form is accepted.

- Department of Mathematics: around July 17, 2015
- Departments other than that of Mathematics: around August 10, 2015

◎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 (2 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 4 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, with the possibility of an additional 2 years. Students can also take a temporary leave of absence from school for up to 2 years.

4. Procedures 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 the 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 Fee

The annual tuition fee is determined by the calculation below for every year of the term.

$$\begin{array}{l} \text{Annual tuition fee as} \\ \text{a Long-term Graduate} \\ \text{Student} \end{array} = \begin{array}{l} \text{Annual tuition fee for} \\ \text{his/her attending year} \end{array} \times \frac{\text{Regular course term (2 years)}}{\text{Period of his/her accepted} \\ \text{Long-term Course (years)}}$$

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, 2015

Department of Mathematics, Graduate School of Science

Master's Course

| Fields | Supervisors | | Keywords | Remarks |
|---------------------|-------------------------------|---|--|---------|
| Algebra | 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 | |
| | Associate Professor | Masanori Asakura | Arithmetic geometry | |
| | Associate Professor | Noriyuki Abe | Representation theory | |
| | Associate Professor | Youichi Shibukawa | Yang-Baxter equations and quantum groups | |
| | Associate Professor | Kenichiro Tanabe | Vertex algebras, algebraic combinatorics | |
| | Associate Professor | Daisuke Matsushita | Algebraic geometry | |
| | Associate Professor | Masahiko Yoshinaga | Algebraic geometry, combinatorics | |
| | Specially Appointed Lecturer | Simona Settepanella | Singularity theory, combinatorics | |
| | Assistant Professor | Kazuma Morita | Arithmetic geometry | |
| Geometry | Professor | Goo Ishikawa | Real algebraic geometry, singularity theory | |
| | Professor | Shyuichi Izumiya | Geometry, singularity theory | |
| | Professor | Katsunori Iwasaki | Complex geometry, dynamical systems, Painleve systems | |
| | Professor | Toru Ohmoto | Singularity theory, topology | |
| | Associate Professor | Toshiyuki Akita | Topology | |
| | Associate Professor | Shimpei Kobayashi | Differential geometry | |
| | Associate Professor | Masao Jinzenji | Mathematical physics | |
| | Associate Professor | Hitoshi Furuhata | Differential geometry | |
| | Assistant Professor | Yutaka Kanda | Differential topology | |
| | Assistant Professor | Kenta Hayano | Topology | |
| Analysis | Professor | Hiroaki Aikawa | Potential theory, real analysis | |
| | Professor | Asao Arai | Mathematical physics, functional analysis | |
| | Professor | Hideo Takaoka | Differential equations | |
| | Professor | Akihito Hora | Functional analysis, probability theory | |
| | Associate Professor | Masaharu Kobayashi | Harmonic Analysis | |
| | Associate Professor | Reiji Tomatsu | Operator algebras | |
| | Associate Professor | Naofumi Honda | Algebraic analysis | |
| | Associate Professor | Tadahiro Miyao | Mathematical physics, functional analysis | |
| | Assistant Professor | Takahiro Hasebe | Probability theory, complex analysis, functional analysis | |
| Assistant Professor | Nao Hamamukai | Nonlinear partial differential equations, Theory of viscosity solutions | | |
| Applied Mathematics | Professor | Shin-ichiro Ei | Nonlinear analysis, nonlinear partial differential equations | |
| | Professor | Hideo Kubo | Partial differential equations, scattering theory | |
| | Professor | Shuichi Jimbo | Applied analysis, partial differential equations | |
| | 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 | Mathematical physics, probability theory | |
| | 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 | |
| | Assistant Professor | Masakazu Akiyama | Mathematical modeling, mathematical and theoretical biology, numerical calculation | |
| | Assistant Professor | Elliott Ginder | Variational methods, free boundary problems, numerical analysis | |

Department of Condensed Matter Physics, Graduate School of Science

Master's Course

| Laboratories | Professors | | Keywords | Remarks |
|---|---|--------------------|---|----------------------------|
| High-Pressure Physics | Professor | Migaku Oda | High-Tc superconductivity, cuprates, scanning tunneling microscopy, scanning tunneling spectroscopy | |
| | 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 | | |
| Magnetism in Strongly Correlated Electron Systems | Specially Appointed Professor | Kazuyuki Koike | Spin, nano, surface, thin films, spin-polarized scanning electron microscopy (spin SEM), spin-polarized scanning tunneling microscopy (SP-STM), spin-polarized spectroscopy, superconductivity, magnetism, heavy fermion behavior, quantum criticality, non-Fermi-liquid behavior, very low temperatures, high magnetic fields, high pressure, transport measurements, ultrasonic measurements, muSR, RXS | Will retire in March, 2016 |
| | Associate Professor | Hideo Matsuyama | | |
| | Professor | Hiroshi Amitsuka | | |
| | Associate Professor | Tatsuya Yanagisawa | | |
| | Assistant Professor | Hiroyuki Hidaka | | |
| Low Temperature Physics | Professor | Atsushi Kawamoto | NMR, strongly correlated electron systems, superconductivity, magnetism | |
| | Lecturer | Yoshihiko Ihara | | |
| Optical Science and Semiconductor Physics | Associate Professor | Tomobumi Mishina | Laser spectroscopy, THz time domain spectroscopy, femtosecond pump-probe spectroscopy | |
| | Assistant Professor | Sekika Yamamoto | | |
| Laboratory of Dielectrics | Specially Appointed Professor | Akira Onodera | Complex liquids, glass transition, broadband dielectric spectroscopy, ferroelectrics, multiferroics, electronic ferroelectricity, phase transition, photoinduced cooperative phenomena | Will retire in March, 2016 |
| | Associate Professor | Ryusuke Nozaki | | |
| | Associate Professor | Masaki Takesada | | |
| Condensed Matter Theory I | Professor | Koji Nemoto | Statistical physics, non-equilibrium, non-linearity, random systems, complex networks, phase transition, self-organization, critical phenomena, scale-free structures, numerical simulation | |
| | Assistant Professor | Koji Okuda | | |
| Condensed Matter Theory II | Associate Professor | Takafumi Kita | Superconductivity, superfluidity, Bose-Einstein condensation | |
| Condensed Matter Theory III | Professor | Shoji Yamamoto | Transition-metal complexes, organic polymers, single-molecule nanomagnets, photoinduced phase transition, optically switchable magnetism, nuclear magnetic relaxation | |
| | Lecturer | Jun Ohara | | |
| Laboratories | Professors | | 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 |

Department of CosmoSciences, Graduate School of Science

Master's Course

| Laboratories | Supervisors | | Keywords | Remarks |
|-------------------------------|---|-----------------------|---|---------|
| Observational Astronomy | Associate Professor | Kazuo Sorai | Observational astronomy, galactic and extragalactic astronomy, interstellar matter, star formation | |
| 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 | | |
| | 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 | |
| | Assistant Professor | Wataru Horiuchi | | |
| Theoretical Astrophysics | Professor | Asao Habe | Theoretical astronomy, numerical simulations, galaxy formation, galaxy clusters, supermassive black holes, interstellar matter, star formation, interstellar dust | |
| | Professor | Takashi Kozasa | | |
| | Assistant Professor | Elizabeth Jane Tasker | | |
| | Assistant Professor | Takashi Okamoto | | |
| Theoretical Planetary Science | Associate Professor | Hidekazu Tanaka | Planet formation, cosmic dust, protoplanetary disks, nucleation theory | |
| 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 | Akihiko Hashimoto | | |
| | Associate Professor | Masaki Ishiwatari | | |
| | Specially Appointed Associate Professor | Junichi Kurihara | | |
| | Lecturer | Mitsuteru Sato | | |
| | Assistant Professor | Masatsugu Odaka | | |
| | Specially Appointed Assistant Professor | Makoto Watanabe | | |
| | Specially Appointed Assistant Professor | Shunichi Kamata | | |
| | Specially Appointed Assistant Professor | 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 | Will retire in March 2016 |
| | Specially Appointed Professor | Yoshinori Furukawa | | |
| | 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 | Professor | Masayuki Aikawa | Nuclear data, nuclear reactions, evaluation | Inter-field Cooperation with the Japan Atomic Energy Agency (JAEA) in the field of nuclear data. |
| | Associate Professor | Yoshiharu Hirabayashi | | |
| | 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 the Japan Aerospace Exploration Agency (JAXA) in the field of spacecraft observation. |
| | Visiting Associate Professor | Yasuhiro Murata | | |
| | Visiting Associate Professor | Issei Yamamura | | |

Department of Natural History Sciences, Graduate School of Science

Master's

| 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 | |
| | 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 | | |
| Planetary Science | Petrology and Volcanology | Professor | Mitsuhiro Nakagawa | Evolution and eruption processes of magma plumbing systems of volcanos; magma generation and eruption processes of caldera volcanos; spatial and temporal variation in arc volcanism; long-term forecasting of volcanic activity and mitigation of volcanic disasters | |
| | | Associate Professor | Takeshi Kuritani | | |
| | | Assistant Professor | Shumpei Yoshimura | | |
| | 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 |
| | | Associate Professor | Shogo Tachibana | | |
| | | Associate Professor | Junji Yamamoto | | |
| | | Assistant Professor | Ken-ichi Bajo | | |

| Research Fields | Research Groups & Laboratories | Supervisors | | Keywords | Remarks |
|--|--|---|----------------------|--|--|
| E a r t h a n d P l a n e t a r y S y s t e m S c i e n c e | Earth Materials Science | Professor | Takaya Nagai | Mineralogy, crystallography, crystal growth, physics and chemistry of minerals | Creative Research Institution, Hokkaido University |
| | | Specially Appointed Assistant 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 | |
| | 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 | |
| | | Associate Professor | Makoto Kawamura | Tectonostratigraphy, soft-sediment deformation, clastic composition, forearc geology, accretion tectonics | |
| | | Specially Appointed Associate Professor | Jinichiro Maeda | Igneous petrology and geochemistry of deep crustal rocks from modern and ancient plate boundaries, magmatic processes in mid-oceanic ridges, deep crustal magmatic processes, history of the Hidaka Magmatic Belt, tectonics of Hokkaido | Will retire in March 2016. |
| | | Associate Professor | Jun Kameda | Subduction zone seismogenesis, water-rock interactions, diagenesis, electron microscopy, clay mineralogy | |
| | | 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 | |

| Research Fields | Research Groups & Laboratories | Supervisors | | Keywords | Remarks |
|--|--------------------------------|---|------------------|---|----------------------------|
| B i o d i v e r s i t y | Biodiversity | Professor | Takeo Horiguchi | Biodiversity II: Microalgae, protists, dinoflagellates, phylogeny, endosymbiosis | |
| | | Specially Appointed Professor | Shin Tochinai | Bidiversity III (Evo-Devo Laboratory): Evo-devo, reproduction, development, regeneration, animal models | Will retire in March 2016. |
| | | Professor | Ryuichi Masuda | Bidiversity IV (Laboratory of Genetic Diversity): Molecular phylogenetics, population genetics, biogeography, mammals, birds | |
| | | Associate Professor | Kazuhiro Kogame | Biodiversity II: Taxonomy, phylogeny, evolution, seaweeds | |
| | | 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 | Masaki Eda | Laboratory of Archaeozoology & Zooarchaeology: archaeological remains, birds, bones, bone collagen, DNA | |
| | | Lecturer | Tsuyoshi Abe | Biodiversity II: Seaweeds, taxonomy, phylogeny, component taxonomy | |
| | | Lecturer | Keiichi Kakui | Biodiversity I: Marine invertebrates, Crustacea, Tanaidacea, taxonomy, phylogeny, morphology | |
| | | Assistant Professor | Toru Katoh | Biodiversity I: evolution, phylogeny, populations, insects | |
| Assistant Professor | Yoshinori Nishita | Bidiversity IV (Laboratory of Genetic Diversity): Molecular genetics, molecular biology, evolution, immunology, mammals | | | |

| Research Fields | Research Groups & Laboratories | Supervisors | | Keywords | Remarks |
|----------------------------|---|-------------------------------|--|---|--|
| Science Communication | Communication of Science and Technology | Specially Appointed Professor | Shigeo Sugiyama | Sociology, science and technology, public participation, governance and policy, technology assessment | Will retire in March 2016. |
| | | Associate Professor | Naoyuki Mikami | | Creative Research Institution, Hokkaido University |
| | | 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, Hokkaido University |
| | Science Education | Professor | Makoto Suzuki | Self-efficacy, cognitive bias, creativity, human-computer interactions, higher education, educational technology, open education | Creative Research Institution, Hokkaido University |
| | | Professor | Toshiyuki Hosokawa | | |
| | | Associate Professor | Fumihito Ikeda | | |
| | | Associate Professor | Kunimasa Yamada | | |
| Associate Professor | | Katsusuke Shigeta | Information Initiative Center, Hokkaido University | | |
| 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 | | |
| | 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 | | |
| | 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 | Hirimitsu Ooshima | | |
| | | Assistant Professor | Hiroshi Aoyam | | |
| | Subsurface Structure | Professor | Takeshi Hashimoto | Subsurface exploration | |
| | | Specially Appointed Professor | Toru Mogi | | |