

**Special Selection for Applicants from
Tertiary Institutions with Academic Agreements
with Hirosaki University**

**Fall 2017 Admission
Spring 2018 Admission**

Application Guidelines

Doctoral Program

Graduate School of Science and Technology

Hirosaki University

Hirosaki University

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◇List of application forms

Application Form; Exam Admission Card; Photo ID Card; Sheet for attaching Certificate of Payment
Intended Research Plan
Summary of Master's Thesis & Past Research
Research Record
Letter of Reference
Special Consideration Request Form
Extended Study Application Form
Eligibility Review Application Form

◇Notice to Applicants

1 Special Selection for Applicants from Tertiary Institutions with Academic Agreements with Hirosaki University Application Guidelines (Fall 2016& Spring 2017)

1. Quota

Course	Research Fields	Fall 2016 Admission	Spring 2017 Admission
Advanced Materials Science & Technology	Functional Materials Chemistry	Several students	Several students
	Materials Processing Physics		
Safety Science & Technology	Environmental & Safety Sciences	Several students	Several students
	Safety System Engineering		

2. Eligibility

Applicants must meet both of the following eligibility requirements.

- (1) Foreign exchange students from a tertiary institution with an international exchange agreement with Hirosaki University (herein “affiliated tertiary institution”) (i.e. currently enrolled student or graduate of said institution)
- (2) Individuals with an outstanding academic record and personal character who have undergone professional education related to their desired course, who are recommended by the chancellor or dean of the affiliated tertiary institution, and who are capable of enrolling in Graduate School of Science and Technology, Hirosaki University(GSST) if admitted. In addition to satisfying the above requirements, applicants must also fulfill one of the following criteria.
 - (a) Persons who possess a master's degree, a professional degree or a degree equivalent to a master's degree, or those who are expected to obtain such a degree by September 2017 (Fall 2017 applicants) or March 2018 (Spring 2018 applicants)
 - (b) Persons who, as a result of obtaining an undergraduate degree from the affiliated tertiary institution and undertaking at least two years of research at that university or its research facility, possess academic ability deemed by GSST to be equivalent to or greater than that of a person with a master's degree
 - (c) Persons who undergo an individual eligibility review and are subsequently deemed by GSST to possess academic ability equivalent to or greater than that of a person with a master's degree and who will be at least 24 years of age by 1 October 2017 (Fall 2017-applicants) or by March 2018 (Spring 2018-applicants) (alternatively, persons with an undergraduate degree from the affiliated tertiary institution and at least two years of practical experience in a science or technology-related field who possess a research record consisting of published books, academic papers, presentations, reports, or patents which are deemed by GSST to be of equivalent or greater value to a master's degree)

N.B.) Persons who pass the entrance exam but who have not fulfilled the above eligibility requirements by the enrollment date will not be granted admission.

<<Eligibility Review>>

Persons who wish to apply for admission based on eligibility criteria (2)-(a) or (b) above must first undergo an eligibility review according to [§ Eligibility Review Application Procedure](#) on page 5.)

3. Application Procedures

Applicants must submit all of the following documents by the below-mentioned deadline.

(1) Application documents

No.	Document	Description
1	Application Form etc.	Fill out the necessary information on the prescribed GSST forms (Application Form; Photo ID Card; Exam Admission Card; Sheet for attaching Certificate of Payment)
2	(Prospective) Certificate of Completion	Certificate of completion of master's or doctoral course or prospective certificate of completion from the applicant's university
3	Certificate of Academic Record	Certificate of academic record for the applicant's master's or doctoral course (this must be submitted in a sealed envelope issued by the applicant's university)
4	Intended Research Plan	Using the form prescribed by GSST, describe in less than 300 English words or 700 Japanese characters the purpose and plan of your intended research theme or field of study after consulting with your preferred academic adviser. *Must be stamped with the adviser's seal.
5	Summary of Master's Thesis & Past Research (outline of research outcomes & research plan)	Using the form prescribed by GSST (a) If you have previously completed a master's program, provide an outline of your master's thesis and attach the thesis itself (photocopies are acceptable). If a number of years have elapsed since completing the course, you may submit an outline of your research record along with a reprint of any authored articles instead of your thesis. (b) If you are expected to complete a postgraduate course, submit a summary of research outcomes up to the date of your application as well as a research plan up to submission of your master's thesis. * You do not need to submit your master's thesis if you completed a postgraduate course at GSST. * The above documents are not required if you are filling an application under eligibility requirement (2)-(b) or (2)-(c).
6	Research Record	If you have authored any papers relating to your desired research theme, list them on the prescribed form in chronological order and attach a paper that best represents your research (photocopies are acceptable).
7	Entrance examination fee	¥30,000 The exam fee must be paid in Japanese yen to a bank account designated by the University. Any fees or charges associated with the bank transfer must be borne by the applicant. * Payment of this fee is not required for students of the Japanese Government Scholarship Program.
8	Certificate of Residence etc.	<ul style="list-style-type: none"> • If you reside in Japan, you must submit a Certificate of Residence (<i>Juminhyo</i>) issued by your local municipality. • If you reside overseas, you must submit a copy of your family register or a certificate of citizenship from the country in which you are residing. * Students of the Japanese Government Scholarship Program must attach their scholarship certificate.
9	Letter of Reference	This letter must be prepared and signed by an adviser at the affiliated tertiary institution at which you are enrolled/from which you graduated, and must also bear the seal or signature of the president or dean.

(2) Application submission period

Monday 5 June to Friday 9 June 2017

- * Applications can be submitted in person between 9:00 a.m. and 5:00 p.m. on any of the above dates.
- Applications submitted by post must arrive by 5:00 p.m. on 5 June 2015.

(3) Payment of the Entrance Examination Fee

In accordance with the specification below, wire the official approval fee of JPY 30,000 from a bank.

We recommend that you complete the bank transfer as quickly as possible because of processing times.

Please be sure the money will reach the designated account.

(Payment information)

Type	Wire Transfer
Paying Method	Advise and Pay
Paying Band charges	Sender's Account
Amount	JPY 30,000
Purpose	Application Fee

(Recipient account information)

Bank's Name	Aomori Bank
Branch Name	Hirosaki Branch
Account type	Ordinary
Bank's Address	19 Oyakatamachi, Hirosaki, Aomori 036-8191, JAPAN
Swift code	AOMBJPJT
Account Number	201-1228599
Account Holder's Name	KEI SATO, PRESIDENT OF HIROSAKI UNIVERSITY NATIONAL UNIVERSITY CORPORATION
Account Holder's address	1 Bunkyo-cho, Hirosaki, Aomori 036-8560, Japan
Account Holder's phone number	+81-(0)172-36-2111

(Note)

The sender name should be the applicant's name.

When transferring from outside of Japan, there are two separate extra charges: a transfer charge and a transaction fee in Japan.

Both of these charges are to be paid by the sender.

Please be sure to specify the transaction fee in Japan as "sender to pay" at the bank counter.

If this is not done, Aomori Bank will charge the recipient that fee, and your payment to Hirosaki University will not be sufficient.

If the correct amount is not transferred to the recipient's account, the applicant will be considered to have failed to make the payment.

BE SURE to pay all the fees and charges; they MUST be at the sender's (applicant's) expense.

Applicants must pay the entrance examination fee of JPY 30,000 by bank transfer, and must provide sender and transaction information.

Submit together the copy of receipt of entrance examination fee (a receipt stamp is necessary) with the other application documents.

(4) All applications documents must be submitted to:

Admissions Department, Student Affairs Division, Hirosaki University
1 Bunkyo-cho, Hirosaki-shi, Aomori Prefecture Japan 036-8560
Tel: +81-(0)172-39-3973/3193

Applications documents can be submitted in person or by post.
When sending application documents from within Japan, please use registered express mail (*kakitome sokutatsu yubin*) and print “Contains application documents for Graduate School of Science and Technology Doctoral Course” in red ink on the front of the envelope.
When sending application documents from overseas, please use Express Mail Service (EMS).

(5) Points to note when submitting application documents

- (a) Consult with your preferred academic adviser before submitting any application documents.
- (b) Application documents that are incorrectly filled out or incomplete will not be accepted, so make sure that all forms are filled out correctly.
- (c) If you have any questions about your application, please contact the Admissions Department in the Student Affairs Division before paying the entrance exam fee.
- (d) You cannot change your desired course after submitting the application documents.
- (e) If your address changes after submitting the application, please notify the Admissions Department immediately.
- (f) Application documents will not be returned under any circumstances.

4. Selection Method:

Selection of applicants for admission will be based on submitted application documents.

5. Announcement of Admission Results

In addition to posting the examinee number of successful applicants on the notice board listed below, a Letter of Admission will be mailed to all successful applicants. Telephone inquiries on admission results will not be accepted.

Date: 10:00 a.m., Thursday 20 July 2017 (to be confirmed)

Location: Admissions Department Notice Board, Student Affairs Division, Hirosaki University

- * Examinee numbers of successful applicants will also be posted on the following website:
Website: <http://www.hirosaki-u.ac.jp/~nyu/>

6. Enrollment Procedure

Successful applicants will be notified of the details of enrollment procedures.

7. Admission & Tuition Fees

Admission fee: ¥282,000 (scheduled cost)

First term tuition fee: ¥267,900 (scheduled cost); Second term tuition fee: ¥267,900 (scheduled cost)

- Note 1) You can pay your admission and tuition fees at the same time. Spring enrollees can pay their first and second term tuition fees at the same time.
- Note 2) In the event of a revision to the admission fee, the revised fee will apply from the date of revision. Similarly, in the event of a revision to the tuition fee, the revised fee will apply from the date of revision.
- Note 3) Once paid, admission fees cannot be refunded under any circumstances.
- Note 4) Government-sponsored international students are not required to pay the admission or tuition fees.

8. Miscellaneous

- (1) Personal information provided in the application documents including the applicant's name, address, and date of birth will be used in the selection process and in the notification of admission results and enrollment procedures and other related matters. Such information will also be used in the management of enrollment details and academic record of enrolled students and in surveys and research aimed at improving the student selection process and educational curricula. All personal information will be properly handled and will not be used for any purposes other than those described above.
- (2) Applicants with a physical disability or special needs are required to notify the Admissions Department in

the Student Affairs Division in advance.

2 Special Exceptions to Educational Methods stipulated in Article 14 of the Standards for the Establishment of Graduate Schools

1. Purpose

Recent advances in science and technology have led to increased demands for further education among engineers, educators and researchers at a postgraduate level. However, Japan's standard education system requires working adults (herein “adult learners”) to leave their workplace in order to study for a period of at least three years, thus restricting their opportunities to obtain a university education.

To this end, Article 14 of the Standards for the Establishment of Graduate Schools states that "*Postgraduate education classes or research guidance may be provided according to an appropriate method at nighttime, or at a separate specified time, when it is recognized that a special educational need exists*" in order to enable special learning measures for adult learner engineers, educators, and researchers.

GSST therefore provides special exceptions as stipulated in Article 14 of these Standards to adult learners who wish to enroll in the GSST Doctoral Program.

2. Special exceptions concerning the day/evening course system & education methods

The GSST Doctoral Program provides a combination of daytime and nighttime courses (herein “day/evening course system”) to adult learners as a special exception to educational methods stipulated in Article 14 of the Standards for the Establishment of Graduate Schools.

In addition to the standard educational courses offered by GSST, students enrolled in the Doctoral Program according to the provisions of these Application Guidelines can also take courses at nighttime or on Saturdays according to a special course plan under the guidance of a GSST adviser. In order for this special exception to apply, students must formulate a three-year course plan upon admission. Applicants who wish to apply for special consideration must therefore notify GSST of their intention prior to taking the entrance exam.

The specific methods for taking classes under the day/evening course system are as follows.

- (1) Prepare a three-year course plan under the guidance of your adviser.
- (2) Special exception class hours must generally be between 6:00 p.m. and 7:30 p.m. and between 7:40 p.m. and 9:00 p.m. on weekdays as well as on Saturdays, so it is necessary to formulate a flexible course plan suited to the circumstances of both the class instructor and the student.
- (3) Students living in remote areas whose work or other circumstances would make it difficult to attend courses only at nighttime and on Saturdays are eligible for considerations such as special course times or specific course periods (such as during extended work leave).

3. Procedure

Applicants who wish to enroll in the GSST Doctoral Program according to the special exceptions to education methods stipulated in Article 14 of the Standards for the Establishment of Graduate Schools must consult with their preferred academic adviser before completing the necessary details on the Special Consideration Request Form and submitting it together with other application documents.

3 Extended Study System

Adult learners who would have difficulty completing the Doctoral Program within the standard study period due to work commitments can apply for extended study. This system also reduces the burden of tuition fees as payments are spread out over a longer period. Applicants who wish to apply for extended study must consult with their preferred academic adviser before completing the necessary details on the Extended Study Application

Form and submitting it together with other application documents.

4 Fast-track Study System

The GSST Doctoral Program allows adult learners to apply for the fast-track study system prior to taking the entrance exam.

Applicants interested in fast-tracking their course duration should consult with their preferred academic adviser before applying.

Inquiries on how to apply for the “Extended Study System” or “Fast-track Study System” should be addressed to the Student Academic Affairs Office as follows:

Student Academic Affairs Office, Graduate School of
Science and Technology, Hirosaki University
Tel: +81-(0)172-39-3930

5 Eligibility Review Application Procedure

1. Applicants eligible for review

Any applicant who submits an admission application based on eligibility requirements (2)-(b) or (2)-(c).

2. Required documents

No.	Document	Description
1	Eligibility Review Application Form	Fill out all required details on this form
2	Documents to be attached: <ul style="list-style-type: none">• Alma mater graduation certificate• Alma mater academic record (in an unopened envelope)• Reprint or photocopy of thesis, published works, etc.	Applicants deemed eligible to apply for admission are not required to re-submit their application documents. Please note that submitted documents will not be returned under any circumstances.

3. How to submit

Applications documents can be submitted in person or by post.

When sending application documents from within Japan, please use registered express mail (*kakitome sokutatsu yubin*) and print “Contains Eligibility Review Application Form for the Graduate School of Science and Technology Doctoral Course” in red ink on the front of the envelope.

When sending application documents from overseas, please use Express Mail Service (EMS).

4. When to submit

Applications for eligibility review must be submitted along with the above-mentioned documents at least one month before the application submission period.

5. Where to submit

Admissions Department, Student Affairs Division, Hirosaki University

1 Bunkyo-cho, Hirosaki-shi, Aomori Prefecture Japan 036-8560

Tel: +81-(0)172-39-3973/3193

Fax: +81-(0)172-39-3125

6. Eligibility review procedure & notification of result

Review will be performed on the basis of submitted documents and you will be contacted by telephone if any further information is required.

You will be notified directly of the review result.

6 Outline of the Graduate School of Science & Technology

Doctoral Program

1 Structure of the Doctoral Program

The structure of the GSST Doctoral Program is shown in the table below. For reference purposes, the structure of the GSST Master's Program is also shown in the smaller table on the right.

Doctoral Program	Course	Research Fields
	Advanced Materials Science & Technology	Functional Materials Chemistry
		Materials Processing Physics
	Safety Science & Technology	Environmental & Safety Sciences
Safety System Engineering		

(for reference)		
Master's Program	Major	Course
	Science & Technology	Mathematical Sciences Advanced Physics Frontier Materials Chemistry Earth & Environmental Sciences Electronics & Information Technology Intelligent Machines & System Engineering Sustainable Energy Special Adult Learner Course

In April 2007, the Graduate School of Science and Technology (GSST) at Hirosaki University launched an affiliate graduate school initiative as part of its doctoral program. This initiative promotes partnerships with national and private research institutions located in Aomori Prefecture and invites their researchers to teach at GSST while also encouraging our students to undertake guided research at their research facilities. We anticipate that this initiative will facilitate academic, scientific and technology developments, and boost our contribution to the community by enhancing the quality of both our graduate education and our students, and by promoting exchanges with various research institutions.

We currently have affiliate agreements with the Aomori Prefectural Industrial Technology Research Center and the Hachinohe National College of Technology.

2 Outline of Courses & Curricula

◆ Advanced Materials Science & Technology

We are currently witnessing remarkable progress in the field of materials science and related technologies, both in terms of the creation of new materials and the pursuit of materials that can be used under extreme conditions. The development of science and technology is broadly driven by the creation of value-added materials with novel functions, and this in turn is underpinned by the application of physics, chemistry, and interdisciplinary sciences. Keeping abreast of these developments requires an innovative education and research system that gives due consideration to basic, applied, and interdisciplinary sciences, as well as partnerships with new research facility plans and projects proceeding within the community. The Advanced Materials Science & Technology Course adopts a materials-centric approach in order to create such a novel system through basic education and research that helps students to better understand materials from various aspects and through pioneering research in new fields encompassing the development of new functions and applications for existing materials, as well as the creation, functional assessment, and promotion of new materials.

The course comprises the fields of functional material science using mainly chemistry-based techniques and material processing engineering using primarily physics-based techniques with an eye to promoting the fusion of science and engineering. By providing education and research that will equip students with the flexibility to create a wide range of products, the course aims to foster researchers capable of independent R&D and highly skilled private-sector professionals capable of linking R&D outcomes to production.

(1) Functional Materials Chemistry

The development of new and functional materials is indispensable to the implementation of environmentally-friendly systems needed to create a sustainable society. The Functional Materials Chemistry Course provides basic education & research on aspects that are crucial to the development of new and functional materials. These include the characterization of materials and the analysis of their functional expression mechanisms as well as their development at the synthesis and functional expression stages. The course aims to foster human resources capable of applying inherent material functions to creation and development in the device industry as well as to the resolution of environmental issues.

Teaching Staff		Research Themes	Class Subject
Prof.	Toshiyuki Abe	Developmental research on photochemical energy conversion systems based on the design of novel visible light-responsive electrodes & molecular catalysts in multielectron processes	Advanced Theory of Functional Molecules for Energy Conversion
Prof.	Shunji Ito	Molecular design and creation of novel functional organic materials and development of advanced synthetic methodologies	Advanced Functional Organic Chemistry
Prof.	Masaaki Okazaki	Creation & functional development of transition metal complexes and clusters based on the synergistic effects of typical elements	Advanced Transition Metal Cluster Chemistry

Teaching Staff	Research Themes	Class Subject
Prof. Hideo Sawada	Development & application of novel fluorine-based functional polymer materials leveraging novel fluorine functions	Functional Materials Chemistry
Prof. Isoshi Nukatsuka	Development of pretreatment systems based on solid-phase extraction for chemical analysis and integrated sensing systems on solid-phase	Integrated Analytical Systems
Prof. Atsushi Yoshizawa	Development of novel liquid crystal-phase structures and functional expression-oriented materials	Advanced Molecular Material Engineering
Assoc. Prof. Jun Kawakami	Molecular design, synthesis, and application of photofunctional organic compounds	Advanced Host-Guest Chemistry
Assoc. Prof. Fumihiko Kitagawa	Development of integrated high-performance separation and high-sensitivity detection systems based on microscale electrophoresis	Advanced Instrumental Analysis
Assoc. Prof. Masanobu Sagisaka	Development of novel functional molecular assemblies and their applications	Advanced Self-Organization Chemistry
Assoc. Prof. Akito Taneda	Biomolecules and nanoscale materials using artificial intelligence	Computational Biomaterials Science
Assoc. Prof. Masaki Hagihara	Development of functional biomolecules with potential applications in energy, environment, and biomedical fields.	Advanced Bioorganic Chemistry
Assoc. Prof. Ryo Miyamoto	Structural chemistry research on the control of electronic or spin states of transition metal and rare-earth metal complexes based on molecular design	Advanced Electron Spin Science

(2) Materials Processing Physics

The development of new, regionally relevant technologies provides an important platform for the promotion of local industry. Furthermore, material technologies are essential to the realization of these innovative technologies. The Materials Processing Physics Course aims to achieve these objectives through basic and applied research on the fundamental science and functionality of electron and photon quantum systems. Through the development of highly functional materials and their manufacturing processes based on elucidation of semiconductor quantum structures, surfaces/interfaces, thin films, multilayer films, and magnetic as well as other materials, the course provides education and research on academic frameworks related to the creation and evaluation of basic materials that will promote future developments. This is accomplished by focusing on understanding the functional expression mechanisms of new materials and through subsequent feedback into new material development, and aims to foster professionals who will pioneer the next generation of local industry.

Teaching Staff	Research Themes	Class Subject
Prof. Masashi Imai	Development of highly reliable LSI design technology & system design technology required for the creation of dependable computer systems	Advanced Logic Design of Dependable LSIs
Prof. Hiroshi Okamoto	Research on elemental technology for semiconductor devices, evaluation techniques in semiconductor materials, and application of the devices in optical communication systems	Advanced Optical Semiconductor Devices
Prof. Hiroo Kato *Retiring in March 2018	Spectroscopic research on solid-surface electronic structures using synchrotron radiation	Advanced Solid-State Spectroscopy using Synchrotron Radiation
Prof. Atsushi Kurokawa	Development of state-of-the-art integrated circuit design technology in the fields of nano- and power-electronics	Advanced Physical Design of System LSIs
Prof. Yasuyuki Kobayashi	Development of New Semiconductors and Research on Green Devices based on the New Semiconductors	Advanced Green Devices
Prof. Kazuhiko Sasagawa	Development of techniques to evaluate the functionality and reliability of micro- and nano-material systems (LSIs and MEMSs) and biomechanical research on the functional evaluation of medical and welfare devices	Advanced Theory of Material Systems Evaluation
Prof. Hiroyuki Sato	Development and reinforcement of nano- and meso-structure mechanical materials, evaluation of strength and life-span, and formation & composition of micromechanical structures	Advanced Theory of High-Strength Materials
Prof. Yasunori Fujikawa	Structural analysis and property measurements on surfaces, thin films and nanostructures by means of multi-probe STM	Surface Microscopy
Prof. Takafumi Miyanaga	Research on local structures in material structure dynamics (phase transition, chemical reactions, surface processes etc.) using synchrotron radiation	Analysis of Materials Structure Dynamics
Prof. Takao Watanabe	Single crystal growth and physical properties of high-temperature superconductors and other strongly correlated materials	Physics of High-temperature Superconductivity
Assoc. Prof. Takashi Azuhata	Optical properties and device applications of indium gallium nitride and other semiconductors	Advanced Optical Engineering
Assoc. Prof. Hojun Im	Spectroscopic research on the physical properties of strongly correlated electron systems using synchrotron radiation	Advanced Electron Correlation Physics

Teaching Staff	Research Themes	Class Subject
Assoc. Prof. Yoshiharu Enta	Surface reactions associated with semiconductor devices, thin crystal growth, surface processing, and electronic states of semiconductor surfaces/interfaces	Advanced Theory of Solid Surface Dynamics
Assoc. Prof. Naoya Kamikawa	Development of advanced structural metallic materials with high strength and high ductility	Microstructure control in metallic materials
Assoc. Prof. Jun Goryo	Theoretical condensed matter physics, mainly, superconductivity...etc	Electronic States in Condensed Matter Systems
Assoc. Prof. Yushi Suzuki	Anomalous enhanced local fields & local structures of solid surfaces, ultra-thin films and nanoparticles	Advanced Theory of Interface Science
Assoc. Prof. Yasuhisa Tezuka	Research on electronic structures of strongly correlated/dielectric materials using high-energy spectroscopy; research on soft X-ray spectroscopy	Advanced Theory of High-Energy Optical Properties
Assoc. Prof. Hideki Nakazawa	Fabrication, structure & properties of highly functional carbon-based thin film materials and their electrical & mechanical applications	Advanced Process Engineering of Semiconductor Materials
Assoc. Prof. Yasutaka Hanada	Laser microfabrication of solids (mainly transparent materials) & optical biomedical engineering (biochip fabrication & optical measurement of biological samples using biochips)	Advanced Laser Processing
Assoc. Prof. Kazuhiro Fujisaki	Micro-nano structure and mechanical reliability of materials for engineering and medicine	Mechanical Reliability of Materials
Adjunct Prof. Kenji Itaka	Material Chemistry for solar cells and thermoelectrics Thin-film energy-conversion materials with combinatorial methods	Optical and Thermal Energy Conversion
Adjunct Assoc. Prof. Takeshi Kubota	Development of high performance magnetic alloys utilizing non- equilibrium phase, and of their devices for power generation/conversion	Advanced Engineering of Electromagnetic Energy Materials

◆ Safety Science & Technology

As society becomes more sophisticated, the complexity and scale of its systems increases such that even a partial failure or breakdown can cause significant damage or have a major impact. Creating an affluent society that exists in harmony with the natural environment requires comprehensive and interdisciplinary initiatives on risk management and security policies for the prevention of natural and social disasters. This course comprises two core research fields: (1) environmental and safety sciences to comprehensively address protection of Aomori Prefecture's natural environment as epitomized by the Shirakami Mountains along with natural disaster prevention for the protection of communities from earthquakes, volcanoes, and weather anomalies; and (2) system engineering to ensure the safety of human life and society at large as well as the reliability & safety of machine-based systems. Thus, this course seeks to enhance the quality of regional communities and to foster researchers and highly skilled professionals capable of engaging in the practical management of community safety.

(1) Environmental & Safety Sciences

Global environmental issues represent an overarching social problem that extends beyond national or regional borders. Education and research to better understand the mechanisms that trigger earthquakes, volcanoes, and weather anomalies, as well as to address and counteract natural disasters, are crucial issue not only for local communities but also for Japan and other nations threatened by earthquakes and volcanoes. Environmental analytical technologies such as satellite remote sensing and image analysis are indispensable to the development of a more accurate understanding of these global environmental issues and natural disasters. In light of the above-mentioned global needs and with an eye to making a positive contribution to the local communities, the Environmental and Safety Sciences Course was established to provide the specialized education and research on environmental analysis necessary to address the issue of natural disaster prevention, which is of critical importance to all communities, as well as other related issues. The course aims to foster highly skilled professionals and researchers who can make genuine contributions to local communities by addressing the various issues facing human and natural environments.

Teaching Staff	Research Themes	Class Subject
Prof. Hideki Asada	Theoretical astrophysics, cosmology (dark energy, dark matter and so on) and gravitation theory including the general theory of relativity	Advanced Modern Astrophysics
Prof. Masumi Kasai	General relativistic cosmology, particularly light propagation and the gravitational lens effect in an inhomogeneous universe	Advanced Observational Cosmology

Teaching Staff	Research Themes	Class Subject
Prof. Masahiro Kosuga	Earthquake mechanisms and seismic wave propagation; seismotectonics of northeast Japan	Advanced Theory of Earth's Internal Structure
Prof. Yasumasa Kodama	Precipitation (rain/snow) mechanisms, radar & satellite precipitation monitoring, and latent heat & atmospheric circulation associated with precipitation	Advanced Precipitation Meteorology
Prof. Yukihiko Nojiri	Geochemical cycles of earth surface environment such as atmosphere, hydrosphere and biosphere, Ocean biogeochemical cycles, Ocean acidification, Observation and analysis of greenhouse gases, Methodology of greenhouse gas inventory	Advanced Environmental Chemistry and Geochemical Cycles
Assoc. Prof. Masakatsu Ichimura	Origin, acceleration & propagation mechanisms of galactic cosmic rays & research and development of high-energy particle detector and data analysis systems	Advanced Theory of Cosmic Radiation
Assoc. Prof. Shunichi Kataoka	Prediction of strong ground motion and effects of ground on seismic motion	Advanced Earthquake Engineering
Assoc. Prof. Akihisa Kamiharako	Nonlinear analysis of reinforced concrete structures damaged by material degradation; quantitative evaluation of effects of concrete structure repair & reinforcement based on consideration of life span	Advanced Maintenance Engineering
Assoc. Prof. Nobusuke Takahashi	Research on high-energy cosmic rays based on the Monte Carlo method, extensive air shower monitoring & research, and detection of cosmic-ray particles using thermoluminescent technology	Advanced Theory of Computational Cosmic Ray Physics
Assoc. Prof. Sumio Tamba	Calibration methods for accurate extraction of oceanic information, particularly extensive temperature distribution information, from satellite remote sensing	Advanced Marine Remote Sensing
Assoc. Prof. Kozo Tsumura	Building earthquake resistance, reinforcement techniques, and nonlinear behavior	Advanced Antiseismic Engineering
Assist. Prof. Yuuiti Sendouda	Cosmological and gravitation theory based on theoretical physics techniques	Advanced Cosmic Particle Physics
Assist. Prof. Ryuichi Takahashi	Cosmology and astrophysics, particularly large-scale cosmic structures, dark energy, gravitational lenses, and gravitational waves	Advanced Cosmic Evolution Theory
Adjunct Assoc. Prof. Seiichiro Ioka	Groundwater hydrology, groundwater chemistry, groundwater thermics, geothermal resource assessment, geothermal research & environmental groundwater science	Advanced Science of Subsurface Fluid

(2) Safety System Engineering

The creation of affluent communities requires the advancement of science & technologies and the development of systems that will enable a balance between convenience/high value creations and reliability/safety. New materials and highly functional machine-based systems are essential in order to realize lifestyles and manufacturing that have a low environmental impact. The development of science & technology must also incorporate disaster and accident prevention as well as wide-ranging improvements in system reliability and safety. Furthermore, networks must operate in a manner capable of addressing the ever-increasing complexity and centralization of economy, society, and culture in order to ensure the convenience and production activities of local communities. Meanwhile, the rapid spread of the Internet has spawned favorable conditions for the creation of new regional information-based industries, but these industries still need to be nurtured.

This course aims to foster highly skilled professionals and researchers to support the creation of a safe and reliable social environment through safety science for both human and social safety, risk management engineering to assess the safety & reliability of machine-based systems, robotics for the development of smart robots and sensors capable of operating in extreme environments, and system evaluation for social safety networks and optimization.

Teaching Staff	Research Themes	Class Subject
Prof. Abuliti Abdula	Fuel Cell Technology (catalyst, electrode, electrolyte, recovering and utilizing heat from fuel cell exhaust), Biomass energy conversion technology	Advanced Fuel Cell Engineering
Prof. Takao Inamura *Retiring in March 2019	Liquid atomization process modeling and spray formation, experimental & numerical analysis of liquid flow, evaporation, and combustion	Advanced Pulse Combustion Engineering
Prof. Kazunori Onoguchi	R & D on computer vision for surveillance, on-vehicle image recognition, and 3D image reconstruction	Advanced Theory of 3D Image Recognition
Prof. Makoto Sakaki	Geometry of curves, surfaces & submanifolds, and geometric variational problems	Advanced Curve & Surface Theory

Teaching Staff	Research Themes	Class Subject
Prof. Koichi Sagawa	Measurement and evaluation of human movement in the fields of sports, medicine and welfare	Advanced Measurement and Control of Medical Engineering
Prof. Daisuke Tambara	Representations of finite groups from categorical viewpoint	Advanced Theory of Group Representation
Prof. Kimitoshi Tsutaya	Asymptotic analysis of nonlinear waves and analysis on non-local wave interactions	Advanced Partial Differential Equation Theory
Prof. Hiroshi Nakazato	Numerical range of finite-dimensional linear systems expressed as matrices; convex analysis of generalized numerical ranges	Advanced Matrix Analysis
Assoc. Prof. Yasushi Iwatani	Vision-based robot control	Advanced Intelligent Robotics
Assoc. Prof. Masamichi Kon	Theoretical consideration of various types of optimal facility location problems and development of efficient algorithms to find solutions	Advanced Mathematical Programming
Assoc. Prof. Yohei Tachiya	Algebraic independence and transcendental number theory, Mahler functions and their applications	Advanced Transcendental Number Theory
Assoc. Prof. Tomoyuki Nagase	Safety-oriented signal processing, telecommunications, and information security	Advanced Security Signal Processing
Assoc. Prof. Koichi Betsumiya	Error-correcting codes and related combinatorial structures	Advanced Theory of Combinatorial Algorithms
Assoc. Prof. Satoshi Mizuta	Study on evolution of the genetic code and alignment-free similarity estimation of biological sequences using bioinformatics approaches	Bioinformatics Analysis
<u>Assist. Prof. Hiromi Ei</u>	Fractals related to some dynamical systems and quasiperiodic tilings	Advanced discrete dynamical systems
Adjunct Prof. Guoqing Guan	Researches on advanced biomass energy conversion technology, energy materials, environment catalysts, gas and metal ion separation technology, microreactor and life cycle assessment of sustainable energy	Advanced Exergy Engineering

2017 Fall Admission/ 2018 Spring Admission
Hirosaki University Graduate School of Science and Technology (Doctoral Program)
Entrance Exam Application Form for Applicants Referred by
an Affiliated Tertiary Institution

		Examinee No.	*
		Date of Birth	Sex
Name		(YY/MM/DD) (years old)	M / F
Desired Course		Desired Research Field	Preferred Academic Adviser
Admission Date	<input type="checkbox"/> Fall 2017 Admission		<input type="checkbox"/> Spring 2018 Admission
Alma Mater	National Public Private University Department Graduation date (YY/MM/DD):		School Course Major
	National Public Private Graduate School Course (Master's; Doctorate) Major Completion/Prospective completion date (YY/MM/DD):		
Applicant's Address (Contact details)	〒 - Address: Tel: () - () - ()		
Eligibility Criterion	(a) (b) (c) (Circle the appropriate eligibility criterion as described in part (2) of section 2 "Eligibility" on page 1)		
Non-Japanese Applicants	Nationality	Study Expenses Category	Private-funded Government scholarship Other
Employed Applicants	Name of Employer: Address: Tel: () - () - ()		
Request for special consideration under Article 14 of Standards for the Establishment of Graduate Schools	<input type="checkbox"/> Yes <input type="checkbox"/> No	Request for Extended Study	<input type="checkbox"/> Yes <input type="checkbox"/> No
		Request for Fast-track Study	<input type="checkbox"/> Yes <input type="checkbox"/> No

Note 1) Do not write in the top right column containing an asterisk (*). In sections containing a check box (□), check the appropriate response.

Note 2) When filling out this form, please print clearly using a black ink fountain or ballpoint pen.

Note 3) Please refer to the "Outline of the Graduate School of Science and Technology Doctoral Program" on pages 6-9 before filling out your desired research field and preferred academic adviser and instructor and be sure to contact your preferred academic adviser first.

* Admission Department Column

Document Submission Checklist		Date Received
<input type="checkbox"/> Application Form <input type="checkbox"/> Exam Admission Card <input type="checkbox"/> Photo ID Card <input type="checkbox"/> Exam Fee Payment Slip N/A { <input type="checkbox"/> Continuing student <input type="checkbox"/> Government scholarship	<input type="checkbox"/> (Prospective) Certificate of Completion <input type="checkbox"/> Certificate of Academic Record <input type="checkbox"/> Intended Research Plan <input type="checkbox"/> Summary of Master's Thesis etc. <input type="checkbox"/> Research Record <input type="checkbox"/> Letter of Reference	<input type="checkbox"/> Certificate of residence <input type="checkbox"/> Scholarship Certificate <input type="checkbox"/> Special Consideration Request Form <input type="checkbox"/> Extended Study Application Form
		Remarks

(See overleaf)

Résumé Details

Academic Background	Admitted (YY/MM/DD) / /		
	Graduated / /		
	Admitted / /		
	Graduated / /		
	Admitted / /		
	Graduated / /		
	Admitted / /		
	Graduated / /		
	Admitted / /		
	(Prospective) completion / /		
Research Background	From (YY/MM/DD) / /		
	Until / /		
	From / /		
	Until / /		
	From / /		
	Until / /		
Work History	Duration	Name of Employer:	Occupation
	From (YY/MM/DD) / /		
	Until / /		
	From / /		
	Until / /		
	From / /		
	Until / /		
	From / / (until present date)		
Qualifications/ Licenses etc.	(YY/MM/DD) / /		
	(YY/MM/DD) / /		
Awards/ Penalties	(YY/MM/DD) / /		

Note 1) applicants must provide details of all schools attended from elementary school onwards.

Note 2) If you have been a research student, please provide details in the Academic Background section.

Note 3) Discovery of any false or intentionally omitted résumé entries may result in cancellation of admission.

- Fall 2017 Admission
 Spring 2018 Admission

Hirosaki University Graduate School of Science and Technology
 (Doctoral Program)

Exam Admission Card

Examinee No.	*
Desired Course	Course
Name	

Photo
 4 cm × 3 cm

Please attach a passport photo taken within the last three months.

Please also ensure your name is written on the back of the photo.

- Note 1) Be sure to bring the Exam Admission Card with your attached passport photo to the entrance exam.
 Note 2) Keep this card until completion of the enrollment procedures.



- Fall 2017 Admission
 Spring 2018 Admission

Hirosaki University Graduate School of Science and Technology
 (Doctoral Program)

Photo ID Card

Examinee No.	*
Desired Course	
Name	

Photo
 4 cm × 3 cm

Please attach a passport photo taken within the last three months.

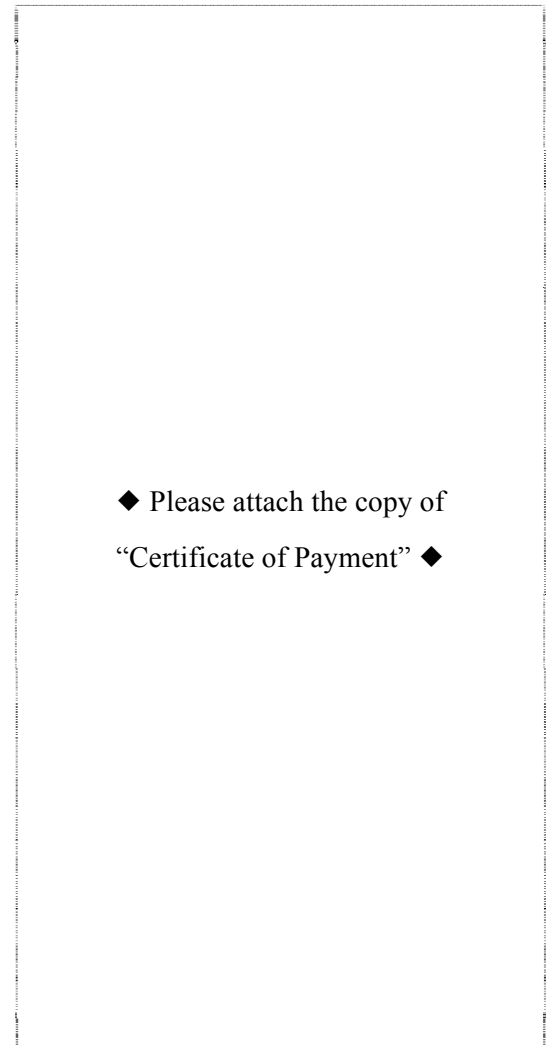
Please also ensure your name is written on the back of the photo.

- Fall 2017 Admission
 Spring 2018 Admission

Hirosaki University Graduate School of Science and Technology
 (Doctoral Program)

Copy of Certificate of Payment

Sheet for Attaching Payment Certificate



◆ Please attach the copy of “Certificate of Payment” ◆

Examinee No.	*
Desired Course	Department
Name	

Do not write in the top column containing the asterisk (*).

Summary of Master's Thesis & Past Research (Outline of Research Outcomes & Research Plan)

		Examinee No.	*
		Date of Birth	
Name		(YY/MM/DD)	(years old)
		Sex	
Desired Course	Desired Research Field	Preferred Academic Adviser	<input type="checkbox"/> Fall 2017 Admission
			<input type="checkbox"/> Spring 2018 Admission

- Note 1) Do not write in the top right column containing an asterisk (*).
- Note 2) Provide a clear and concise summary of your master's thesis and past research in 1,000 characters or less
- Note 3) If you are expected to complete a master's course, submit a summary of your research outcomes up to the date of your application as well as a research plan up to submission of your master's thesis.

Research Record

		Examinee No.	*
		Date of Birth	Sex
Name		(YY/MM/DD)	(years old)
Desired Course	Desired Research Field	Preferred Academic Adviser	<input type="checkbox"/> Fall 2017 Admission <input type="checkbox"/> Spring 2018 Admission
Title of academic articles, books, presentations made at seminars, symposiums, & international conferences, patents and inventions, etc.	Write the title, volume & page numbers and year of publication (please specify if the article is in the submission stage or still being printed)		Name of co-authors or co-presenters (in order of presentation, including applicant)
	Title & date of presentations, symposiums, & international conferences, etc.		

Note 1) Do not write in the top right column containing an asterisk (*).

Note 2) Write the name of any papers or articles relating to your intended research theme in chronological order.

Note 3) Attach a copy of academic papers (photocopies are acceptable)

Examinee No.	*
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Attn: Chancellor of Hirosaki University

Letter of Reference

I hereby acknowledge that Hirosaki University Graduate School of Science & Technology Doctoral Program applicant _____ fulfills the requirements for special selection and recommend him/her for admission as per the following details.

Date (YY/MM/DD):

Name of Institution:

Referee Address:
(Academic Adviser)

Name/Position:

Seal

Please outline the findings of the applicant's previous research and research plan and describe his/her academic ability and character etc.

Name of University or Graduate School (Department):

Name of Chancellor or Dean:

N.B.) Do not write in the top right column containing an asterisk (*).

2017 Fall Admission / 2018 Spring Admission
Hirosaki University Graduate School of Science and Technology (Doctoral Program)

Special Consideration Request Form

		Examinee No.	*
		Date of Birth	
Name	(YY/MM/DD)	(years old)	Sex M / F
Desired Course		Desired Research Field	Preferred Academic Adviser
Admission Date	<input type="checkbox"/> Fall 2017 Admission <input type="checkbox"/> Spring 2018 Admission		
Current address:	〒 -		
	Tel: ()-()-()		
Employer:	Name of Employer:		
	Address:		
	Tel: ()-()-()		
Reason(s) for requesting special consideration:			

Note 1) Do not write in the top right column containing an asterisk (*).
 Note 2) Please consult with your preferred academic adviser before submitting this form.

Extended Study Application Form

Date: / /

Attn: Chancellor of Hirosaki University

Applicant's Name: _____

Graduate School/Course:

School: _____ Course: _____

* Student No. _____

I hereby request approval to undertake extended study.

1. Extended study period

Starting year: to

Duration (YY/MM/DD): / / - / / (years)

2. Reason(s) for requesting extended study:

* I hereby acknowledge the above-mentioned details.

Adviser's Name: _____

(* Student number is not required for unenrolled applicants)

Research Record

1. Books & other publications

Title of academic articles, books, presentations made at seminars, symposiums, & international conferences, patents and inventions, etc.	Write the title, volume & page numbers and year of publication (please specify if the article is in the submission stage or still being printed) ----- Title & date of presentations, symposiums, & international conferences, etc.	Name of co-authors or co-presenters (in order of presentation including applicant)

2. Research Background

Position & Organization	Duration	Research Theme & Description etc.

* If the space provided above is insufficient, please attach a separate piece of paper using the same format.

Notice to Applicants

Graduate School of Science and Technology Doctoral Program website

Please visit our website for more information on GSST.

Website: <http://www.st.hirosaki-u.ac.jp/graduate/>

For inquiries, please contact:

Inquiry	Office	Tel ; E-mail
<input type="radio"/> Matters relating to the entrance exam	Postgraduate Affairs, Admissions Department	+81-(0)172-39-3973/ 3193 jm3973@hirosaki-u.ac.jp
<input type="radio"/> Application for waiver of admission & tuition fees	Economic Support Office, Student Guidance Department	+81-(0)172-39-3117/ 3135 jm3117@hirosaki-u.ac.jp
<input type="radio"/> Matters relating to the student dormitories	Extracurricular Education Office, Student Guidance Department	+81-(0)172-39-3107 jm3107@hirosaki-u.ac.jp
<input type="radio"/> Student academic affairs	Educational Affairs Office, Graduate School of Science and Technology	+81-(0)172-39-3930 jm3922@hirosaki-u.ac.jp