

**GUIDELINES FOR APPLICANTS (October 2019)**  
**to *The Double-Degree Master's Program***  
***In Computational Science***  
**at the Graduate School of Natural Science and Technology**  
**Kanazawa University**  
**JAPAN**

Based on the agreement with Universitas Gadjah Mada, Republic of Indonesia, a Special Selection for the Double-Degree Master's Program will be performed.

## **I. Departmental Division**

Applicants will be accepted into Computational Science Course (\*) in the Division of Mathematical and Physical Sciences.

(\*) See Appendix.

## **II. Enrollment**

In general, 10 students will be accepted.

## **III. Qualification**

Applicants applying to the Double-Degree Master's Program of Kanazawa University must satisfy the following requirements:

(1) Have completed 16 years of qualified education, or will have done so by September 30, 2019.  
AND

(2) Will have enrolled in one of the Master's Programs at the Faculty of Mathematics and Natural Sciences, Universitas Gadjah Mada by October 1, 2019.

## **IV. Application Procedure**

### **1. Documents**

#### **(1) Application form and Photograph (\*)**

Documents must be written in English. Use the format supplied. A passport style color photograph (3x4 cm, recently taken, full face, and printed with the applicant's name on the back) should be pasted on the specified place of the application form.

#### **(2) Official Undergraduate Transcripts (\*)**

An official English translation of academic transcripts.

#### **(3) Certificate of Graduation (\*)**

An official English translation of the University Diploma or an official letter written in English stating the expectation of graduation. The latter is not needed, if the transcripts include the statement of graduation.

#### **(4) Certificate of Enrollment (\*)**

An official letter written in English from Universitas Gadjah Mada stating that the applicant will have enrolled in one of the Master's Programs at the Faculty of Mathematics and Natural Sciences by October 1, 2019 and indicating the expected graduation date.

#### **(5) Certificate of Health (\*)**

Use the format supplied. Contents will not impact selection.

(\*) Photocopies of the original documents will not be accepted.

## 2. Application Period and Location

Application Period: **July 29 – August 2, 2019**  
Location: **Office of International Affairs, Faculty of Mathematics and Natural Sciences at Universitas Gadjah Mada**

## 3. Examination

Selection will be based on the results of an oral examination (#), the matching between the applicant and his/her prospective supervisor(s) (##), and the academic transcripts.

Date: **09:00 (UTC+7) – on August 27, 2019**  
Location: **Room 221, Graduate Building of Faculty of Mathematics and Natural Sciences at Universitas Gadjah Mada**

(#) The oral examination may be performed using a telecommunication system. The oral examination will be performed in English.

(##) Before the oral examination (or before the application period, if possible), the applicant should contact the prospective academic supervisor(s) through e-mail, Skype, etc.

## 4. Announcement of Results

Date: **September 6, 2019**  
Location: **Office of International Affairs, Faculty of Mathematics and Natural Sciences at Universitas Gadjah Mada**

## V. Notes

- (1) Studentship is based upon the agreement between Universitas Gadjah Mada and Kanazawa University.
- (2) Applications will not be accepted if any of the documents are incomplete, incorrect, or not supported by evidence, or if they are not received by the specified deadline. Once submitted, documents cannot be modified and will not be returned.
- (3) If any information of the documents is later found to be false, admission can be canceled at any time after enrollment.
- (4) Personal information submitted here will only be used for the admission process and the Double-Degree Master's Program.
- (5) Applicants are expected to learn and understand the geography, climate, customs and traditions of Japan as well as the rules of Kanazawa University. Also, although the thesis work can be carried out in English, it is recommended to get accustomed to the Japanese language for the essentials of daily life.

## VI. Contact

For further information, please contact the office below via e-mail, or airmail:

Admission Affairs Section  
Science and Engineering Administration Department  
Kanazawa University  
Kakuma-machi, Kanazawa 920-1192, Japan

E-mail: [s-nyusi@adm.kanazawa-u.ac.jp](mailto:s-nyusi@adm.kanazawa-u.ac.jp) (please include "[DDP]" in the subject header)

## Appendix

### Staff and Fields of Computational Science Course in the Division of Mathematical and Physical Sciences

**Chairman:** Professor Mineo SAITO (e-mail: m-saito@se.kanazawa-u.ac.jp)

#### *Staff of Computational Mathematics*

**Professor Manabu OURA**

My research field is algebraic combinatorics. Keywords should be association scheme, coding theory, invariant theory, modular form.

**Professor Katsuyoshi OHARA**

We study and develop computer algebra systems related to special functions. Our research contains theory of Groebner bases for non-commutative rings, hypergeometric functions with multivariables, systems of holonomic differential equations and symbolic computations. We also use numerical computations for ordinary differential equations.

**Professor Seiro OMATA**

Our research concerns theoretical examination of partial differential equations describing superconductivity, motion of droplets, collision of objects, fracture mechanics, tsunami, crystal growth and other physical phenomena. We develop and teach techniques for modeling and simulation of various phenomena related to nature, biology and society. We also provide guidance and research on mathematical finance.

**Associate Professor Kenichi KAWAGOE**

Topology of knots, links and surfaces, representations of the braid groups and the quantum groups, and numerical calculations of quantum invariants.

**Professor Masato KIMURA**

Our research fields are numerical simulation and mathematical analysis of partial differential equations related to mathematical modeling of several phenomena, such as moving boundary problems, pattern dynamics, elasticity and fracture mechanics, particle simulation of fluid.

**Associate Professor Atsuhira NAGANO**

My research area is special functions and its applications to number theory. Especially, I am working on period mappings, K3 surfaces, Abelian varieties, hypergeometric functions and automorphic functions.

**Professor Hirofumi NOTSU**

My research interests are in the area of numerical analysis of partial differential equations arising especially in fluid dynamics. I am working on development and analysis of finite element schemes and their application to practical problems, which are important in scientific computing.

**Associate Professor Norbert POZAR**

I specialize in the analysis of nonlinear partial differential equations (PDEs) modelling phase transitions, crystal growth, population dynamics, fluid interfaces, etc., and the development of numerical methods for such PDEs. I am also interested in applying PDE and machine learning methods to image processing.

**Assistant Professor Patrick van MEURS**

I study the modelling, numerics and analysis of particle systems such as atoms, molecules, cells, sand, schools of fish, flocks of birds and crowds of people. The goal of my research is to discover the group behaviour of such particle systems.

#### *Staff of Computational Experimentation*

**Professor Tatsuki ODA, Assistant Professor Masao OBATA**

Computational research in solid state physics (bulk properties, surface properties, and nanostructure properties), development of first-principles molecular dynamics, and basic research

for spintronics applications in computational science (Rashba effect, electric field control of magnetic anisotropy, etc.).

**Professor Mineo SAITO, Associate Professor Fumiyuki ISHII**

New materials are designed by using parallel supercomputers. We study electronic structures of semiconductors, 2D nanomaterials, energy materials, topological materials and magnetic materials.

We also study interstellar molecules and clusters.

**Professor Masahide SATO**

By carrying out computational simulations and stability analysis, we study morphology of crystals, instabilities of steps on crystals, step bunching and step wandering.

**Professor Hidemi NAGAO, Assistant Professor Kazutomo KAWAGUCHI**

We study structure and dynamics of the biological system (protein, lipid bilayer) by using molecular dynamics simulations. We also develop a coarse-grained model of soft matter (polymer, membrane) for multi-scale simulation.

**Professor Shinichi MIURA**

Microscopic properties of condensed matter systems ranging from superfluids to hydrated proteins are studied with extensive use of statistical mechanics, quantum mechanics and advanced molecular simulation techniques.

Please attach this checklist on top of your application documents

**CHECKLIST**  
for Double-Degree Program Application Documents  
KANAZAWA UNIVERSITY

Application Period: July 29 – August 2, 2019

Name in English: \_\_\_\_\_

Please mark  in the following boxes of the items you enclosed.

All documents must be written in English. Photocopies will not be accepted.

- Application Form (\*)**  **with photograph pasted on the specified place (#)**
- Official Undergraduate Transcripts**  **in English**
- Certificate of Graduation** ( **included in the above Transcripts**)  **in English**
- Certificate of Enrollment**  **in English**
- Certificate of Health (\*)**  **in English**

For items marked with the (\*) symbol, use the designated forms. For forms and certificates without the (\*) symbol, prepare them by yourself.

(#) A passport style color photograph (3x4 cm, recently taken, full face, and printed with your name on the back) should be pasted on the specified place of the application form.

MISSING DOCUMENTS: Are there any missing documents?  Yes  No

If yes, please list the item(s) and your reason for not including the missing document(s).

Missing document(s) and explanation: \_\_\_\_\_

Expected date of sending the above documents to Kanazawa University: (Y/M/D) \_\_\_\_\_

DOUBLE-DEGREE MASTER'S PROGRAM

KANAZAWA UNIVERSITY

10 月期入学

APPLICATION FOR ADMISSION (October 2019)  
TO THE GRADUATE SCHOOL  
OF NATURAL SCIENCE AND TECHNOLOGY  
(Master's degree)  
KANAZAWA UNIVERSITY

Photograph:3x4cm,  
recently taken, full  
face, and printed  
with your name on  
the back.

2019 年度 10 月期

金沢大学大学院自然科学研究科

(博士前期課程) 入学願書

受験番号

(Do not fill in.)

Application Category (受験区分):

**Special Selection (Double-Degree Master's Program)** (特別選抜(二重学位制度))

Division to which you are applying (志望専攻): **Computational Science Course in the Division of Mathematical and Physical Sciences** (数物科学専攻計算科学コース)

Intended Field of Study at Kanazawa University (金沢大学での希望研究分野):

Name of Prospective Academic Supervisor at Kanazawa University (金沢大学での指導教員名):

Prospective Study Period at Kanazawa University (金沢大学での在学期間):

**From (Y/M) :** \_\_\_\_\_ **To (Y/M) :** \_\_\_\_\_

Home Institution (所属大学院):

**Faculty of Mathematics and Natural Sciences, Universitas Gadjah Mada**

(ガジヤマダ大学自然科学研究科)

Expected Graduation Date at Your Home Institution (所属大学院の修了予定日):

(Y/M/D) \_\_\_\_\_

Name in English (氏名): (Indicate your full legal name as it appears in your passport.)

Male (男)

Female (女)

Name in Katakana (if possible) (カタカナ): \_\_\_\_\_

Date of Birth (生年月日): (Y/M/D) \_\_\_\_\_

Marital Status (結婚歴):  Single  Married

Present Address (現住所):

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Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Country of Present Citizenship (国籍): \_\_\_\_\_

Information for Certificate of Eligibility (在留資格認定証明書申請用):

Passport Number (パスポート番号): \_\_\_\_\_  in process (申請中)

Past entry into/stay in Japan (来日歴):  Yes  No

Criminal record in Japan or overseas (刑罰歴):  Yes  No

Family in Japan (在日親族):  Yes  No

Location of Japanese embassy/consulate to apply for visa (ビザ申請予定地): \_\_\_\_\_

Educational Background (学歴): (List all schools attended in chronological order.)

Name of institution (学校名、小学校から) (Elementary, Secondary, and Post-Secondary)	Location (所在国) (Country)	Period (期間) (yy/mm — yy/mm)	Years Attended (年数)
(1) _____	_____	_____	_____ <u>years</u>
(2) _____	_____	_____	_____ <u>years</u>
(3) _____	_____	_____	_____ <u>years</u>
(4) _____	_____	_____	_____ <u>years</u>
(5) _____	_____	_____	_____ <u>years</u>
(6) _____	_____	_____	_____ <u>years</u>
(7) _____	_____	_____	_____ <u>years</u>
Total years of education			_____ <u>years</u>

Highest diploma/degree awarded (学位): \_\_\_\_\_

Japanese Language Study(\*) (日本語学習歴):  None

Period of Study (yy/mm/dd)	Name of Institution	Textbook Names
____ / ____ / ____ ~ ____ / ____ / ____	_____	_____
____ / ____ / ____ ~ ____ / ____ / ____	_____	_____
____ / ____ / ____ ~ ____ / ____ / ____	_____	_____
____ / ____ / ____ ~ ____ / ____ / ____	_____	_____

Japanese Proficiency (\*) (日本語能力): (Please give your own assessment of your Japanese proficiency.)

Speaking:  Excellent  Good  Fair  Poor  None

Listening:  Excellent  Good  Fair  Poor  None

Reading:  Excellent  Good  Fair  Poor  None

Writing:  Excellent  Good  Fair  Poor  None

English Proficiency (\*) (英語能力): (for non-native English speaking applicants only.)

Speaking:  Excellent  Good  Fair  Poor  None

Listening:  Excellent  Good  Fair  Poor  None

Reading:  Excellent  Good  Fair  Poor  None

Writing:  Excellent  Good  Fair  Poor  None

(\*) Contents entered into this item will not impact selection. (記入された事柄は、選抜には影響しません。)

Work Experience (職歴):  None

Name of Company (会社名)

Location (所在地)

Period of Employment (期間)

(Country)

(yy/mm/dd)

(1) \_\_\_\_\_ / / ~ / /

(2) \_\_\_\_\_ / / ~ / /

(3) \_\_\_\_\_ / / ~ / /

Emergency Contact Information (family address) (緊急時連絡先):

(氏名)

(続柄)

(職業)

(所在国)

Name

Relationship

Occupation

Country of Residence

Address (住所):  same as Present Address (現住所と同じ)

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

I certify that all the information provided on this form and in the accompanying documents is complete and accurate to the best of my knowledge, and, if admitted, I agree to comply with the rules and regulations of Kanazawa University.

(願書及び添付書類に間違いはありません。合格後は金沢大学の規則等を遵守します。)

Date (Y/M/D):

Signature:



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2019 Kanazawa University Graduate School

## Certificate of Health

Graduate Course: Natural Science and Technology

Major: Division of Mathematical and Physical Sciences

Name (first, middle, last) \_\_\_\_\_

Sex (male • female)

Date of Birth (yy/mm/dd): \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Height: \_\_\_\_\_ cm      Weight: \_\_\_\_\_ kg

Eye sight:      right \_\_\_\_\_      left \_\_\_\_\_

Hearing ability: right (normal • abnormal)      left (normal • abnormal)

Chest X-ray:      Date (yy/mm/dd): \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Findings: \_\_\_\_\_

Comment: \_\_\_\_\_

Past history and Present illness:

\_\_\_\_\_

Total comments and suggestions by physician(s)

I (We) certify that these findings are accurate based on examinations.

Date (yy/mm/dd): \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Hospital or Institution:

\_\_\_\_\_

Physician (print): \_\_\_\_\_

\_\_\_\_\_

(signature)