PROSPECTUS
FOR
THE DOCTORAL PROGRAM

Graduate School of System Informatics
KOBE UNIVERSITY
3rd Term, 2023
(Starting in October, 2023)

About Kobe University Graduate School of System Informatics

Graduate School of System Informatics, Kobe University was established in April 2010 when the Department of Computer Science and Systems Engineering was separated from the Graduate School of Engineering. Both the Master's Program and Doctoral Program of the Graduate School of System Informatics had been organized into the following three departments: Systems Science, Information Science, and Computational Science. From April 1, 2023, the Graduate School of System Informatics was reorganized as one department: System Informatics.

A Doctor of Philosophy in System Informatics, a Doctor of Philosophy in Engineering, a Doctor of Philosophy in Computational Science, or a Doctor of Philosophy will be granted upon completion of the Doctoral Program of the Graduate School of System Informatics.

Admission Policy of the Graduate School of System Informatics, Kobe University

The Graduate School of System Informatics engages in research and education in the fields of systems, information, and computational technologies, focusing on system information (significant information that exists in a broad range of systems, including nature, engineering, and society) to create and expand new academic disciplines, in order to conceive new knowledge and values. The Graduate School hopes to train people possessing great creativity and a cosmopolitan outlook in order to contribute towards this objective. For this purpose, the Graduate School is committed to enrolling students from a wide range of backgrounds, not only from Japan but also from overseas.

Doctoral Program

●Applicants are sought with the following qualities and abilities:

The Doctoral Program of the Graduate School of System Informatics hopes to enroll students who meet one of the following criteria:

1. Students who have studied system technology, information technology, computational technology, or similar technology at an engineering- or informatics-related faculty or graduate school.
2. Students who demonstrate a strong interest and enthusiasm for applying and expanding the application of technology (such as system, information, and computational technologies) to the various fields of science, including medicine, humanities, or social science.
3. Students who are rich in creativity and ideas demonstrate logical thinking skills and are strongly motivated toward creating and developing new fields in system informatics.

In addition, the Graduate School of System Informatics Doctoral Program welcomes working adults, such as those who have conducted and published research at a company, laboratory, or the like.

●Basic Policy for the Selection of Students:

In order to select students demonstrating the qualities above, in line with the Diploma Policy and Curriculum Policy of the Doctoral Program of the Graduate School of System Informatics, the Graduate School assesses various competencies in the entrance examination below.

The general entrance examination is mainly designed to assess "knowledge and technique," "critical thinking, good judgment, and expression," "initiative and cooperativeness," and "interest and motivation."

(Admissions inquiries for the Doctoral Program of the Graduate School of System Informatics)

Student Affairs Section, Graduate School of Engineering, Kobe University
1-1, Rokkodai-cho, Nada-ku, Kobe, Hyogo 657-8501
Tel : +81(0)78-803-6350
e-mail: eng-kyomugakusei@office.kobe-u.ac.jp
Website of the Graduate School of System Informatics: http://www.csi.kobe-u.ac.jp/
Website of Kobe University: https://www.kobe-u.ac.jp/

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I The Doctoral Program of Graduate School of System Informatics General Admission Guidelines

System Informatics

2023 October (3rd Term)
Graduate School of System Informatics, Kobe University, the Doctoral Program
Application Guidelines

1. Departments and the Number of Students to be Accepted

Department	No. of Students
System Informatics	A few

(Note) The number of students to be accepted includes students who go on to a doctoral program from our master's programs, foreign students, and students entering from the workforce.

2. Qualification for Applicants

Applicants must currently meet one of the following requirements or be eligible to meet one of these requirements by September 30, 2023.

(1) Those who have obtained a master's degree or a professional degree.
(2) Those who have obtained a degree equivalent to a master's degree or a professional degree in a foreign country.
(3) Those living in Japan who have completed a correspondence course in a foreign-affiliated educational institution and obtained a degree equivalent to a master's degree.
(4) Those who have completed their education in a foreign-affiliated university within a school educational system of a foreign country in Japan and designated by the Minister of Education, Culture, Sports, Science and Technology, limited to those who have obtained a degree equivalent to a master's degree or a professional degree.
(5) Those who have been conferred a degree equivalent to a master's degree from the United Nations University which was promulgated by the General Assembly of the United Nations on December 11, 1972 and in accordance with the Agreement between Japan and the United Nations concerning the Act on Special Measures Incident to Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (1976, Resolution 72, Article 1, Item2)
(6) Those who have completed the curricula at a foreign university, an educational institution which is designated under Item 4, or the United Nations University and are recognized as having academic abilities equivalent or superior to those given a master's degree by passing the examination and screening which are equivalent to the ones stipulated in Article 16, paragraph (2) of the Standards for Establishment of Graduate Schools (under Ministry of Education, Culture, Sports, Science and Technology Ordinance No. 28, 1974).
(7) Those who are approved by the Minister of Education, Culture, Sports, Science and Technology (under Minister of Education, Culture, Sports, Science and Technology Public Notice No. 118, 1989).
(8) Those who are 24 years of age or older and are recognized by Eligibility Screening as having academic abilities equivalent or superior to those given a master's degree or a professional degree.

【Note】 Those who intend to apply under the requirement (7) or (8) above should refer to "8. Eligibility Screening" because they are subject to screening prior to their applications

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3. Application Procedures

（1） Period of application and how to submit the application

From July 18 (Tue.) 2023 to July 21 (Fri.) 2023

When you submit in person, the office hours are Monday through Friday, from 9:00 to 11:30 & 13:00-17:00.

If you submit by mail, your application documents must arrive no later than 17:00, **July 21 (Fri.) 2023**. On the envelope, write “Application Documents for the Doctoral Program” in red and mail it by “express registered mail”

（2） Mailing Address:

Kobe University Graduate School of Engineering, Students Affairs Section
1-1, Rokkodai-cho, Nada-ku, Kobe 657-8501
Tel +81(0)78-803-6350 (direct)

（3） Application documents

（A） Application form: Form designated by the Graduate School of System Informatics (Form No.1)

（B） ID for the examination (Form No. 3) and Certificate of payment Card (Form No. 4)

（C） Photograph: Affix two copies of photograph to the designated places on the application form and the ID for the examination. Enclose also a copy of photograph which is 3 cm long and 2.4 cm wide for your student ID card.

The photograph should be 4 cm long and 3 cm wide and of upper body, taken within three months prior to submitting the application; in the picture, you should be looking straight ahead with your head uncovered.

（D） Curriculum Vitae: Form designated by the Graduate School of System Informatics (Form No.2)

（E） Certificate of (Prospective) Graduation of a master’s degree program of graduate school (master’s course). If the Graduation Certificate indicated above does not show the degree you obtained, please submit a certificate of degree as well. Not required if the applicants are currently enrolled in the Graduate School of System Informatics of Kobe University as Non-Degree Seeking Research Students.

（F） Academic transcript （1）: Academic performance record created by the head of faculty or the principal of the university you graduated from

（G） Academic transcript （2）: Academic performance record created by the head of department or the principal of the graduate school you graduated from. Not required if the applicants are currently enrolled in the Graduate School of System Informatics of Kobe University as Non-Degree Seeking Research Students.

（H） Entrance exam fee: 30,000 Japanese yen

Bring the attached form of JP bank (Form No. 5) and deposit the fee from the bank; make sure to affix the proof of receipt of postal transfer for entrance exam fee to the mounting card and send it together with the application documents. (When paying from overseas, please refer to the “Guide for overseas remittance of entrance examination fees” on page 9.) Japanese government-sponsored international students who will continue to be so after enrollment do not have to pay the fee on condition that they submit the “Certificate of Japanese Government-sponsored International Student” from the university you are currently enrolled (unless you are a student of Kobe University).

（I） Master’s thesis:

（a） Applicants who have completed a master’s degree program (master’s course)

ｉ） A copy of your master’s thesis written either in Japanese or in English. If not available, please contact the Student Affairs Section of Graduate School of Engineering in

advance and follow the instructions you will be provided.

ii） Summary of master's thesis (A4): A set of copies of the outline written in both Japanese (approx. 2,000 characters) and English (approx. 1,200 words), with a cover sheet designated by the Graduate School of System Informatics (Form No. 6). For foreign applicants, an English copy alone is sufficient.

(b) Applicants who are expected to complete a master's degree program (master's course) or succeeded in eligibility screening

Research Progress Report (A4): A set of copies of the report written in both Japanese (approx. 2,000 characters) and English (approx. 1,200 words), with a cover sheet designated by the Graduate School of System Informatics (Form No. 6). For foreign applicants, an English copy alone is sufficient.

＊ Any reference material may be submitted along with either (a) or (b).

(J) Research proposal:

(All applicants except successful applicants of eligibility screening)

A copy of A4 report written in Japanese (approx. 2,000 characters) or English (approx. 1,200 words) with a cover sheet designated by the Graduate School of System Informatics (Form No. 7) indicating the details of your intended research and field.

(K) Resident Certificate: Foreign applicants should submit a Copy of Resident Certificate which is issued by the local municipality (valid for 30 days from issue date), or a document that can take the place of the Resident Certificate. (Only for those residing in Japan)

(L) Self-addressed Forms: Write your postal code, address, and name in the form designated by the Graduate School of System Informatics (Form No.8).

(M) Envelope:

(All applicants except those who live abroad)

Write your postal code, home address and name on the envelope designated by the Graduate School of System Informatics and attach 354 yen stamps (Form No.9).

〔Note〕

(1) No changes are allowed in the application documents once they have been received. The entrance exam fee will not be returned to an applicant except in cases where the applicant did not apply or the application was not accepted.

(2) Make sure that documents created in a foreign language other than English are accompanied by a Japanese translation or English translation with the translation accreditation issued by a public institution such as the diplomatic facilities of Japanese or foreign governments.

(3) Applicants should select a desired faculty member from the "Education and Research Fields, Research Subjects, and Faculty Members" and indicate his/her name in the admission application form. Without the desired faculty member's name, the application documents will not be accepted. Also, **applicants should closely contact the expected academic supervisor and create a research proposal.**

(4) For those who submit a certificate of prospective graduation, please submit a certificate of graduation when you enroll. If the certificate does not show the degree you obtain, please submit a certificate of degree as well.

4. Screening Methods

Admission will be determined based on the results of academic examination together with the submitted documents.

The academic examination will consist of an oral examination and interview.

(1) Content of a master's thesis or research progress report

Examined as to whether or not the applicant has basic academic skills required for the course.

(2) English capability (for applicants graduated from a foreign university, both English and

Japanese language skills are examined)
Examined as to whether or not the applicant has language skills required for the course.

(3) Content of research proposal
Examined as to whether or not the research plan meets the doctoral degree to be awarded.

5. Date and Place for the Interviews

Date	Place	Remark
August 31, 2023 (Thu.)	Graduate School of System Informatics Building, Kobe University	Applicants will be notified of time and place for the interview at a later date.

【Access to Kobe University Graduate School of System Informatics Building】
Hanshin "Mikage" station, JR "Rokkomichi" station, or Hankyu "Rokko" station.
Kobe City Bus No. 16 (bound for Rokko Cable)
Shindai Kokusai Bunka Gaku Kenkyuka Mae, 5 min on foot to the Rokkodai Campus

For those who have difficulty in meeting at the indicated date and place above for special reasons, a remote interview might be permitted and provided through the internet. Applicants wishing to be interviewed remotely must apply to the expected academic supervisor and receive a written permit before submitting the application form.

6. Announcement of Successful Applicants

September 8, 2023 (Friday) 10:00 (scheduled)
The results will be announced via the website of the Graduate School of System Informatics, Kobe University.
http://www.csi.kobe-u.ac.jp/exam/
*Successful applicants will receive the acceptance letter. Inquiries will not be accepted via telephone.

7. Admission Procedure

(1) Admission procedure period and admission documents
The admission procedure period is scheduled to be around late September 2023. The details will be mailed to each successful applicant in early September 2023 with necessary documents for the procedure.

(2) Fees

Division		In Japanese yen	Remark
Admission fee		282,000	Admission fee should be paid during the admission procedure period.
Tuition fee	For semester	267,900	Refer to the "General Information for Successful Applicants" which will be sent in late September 2023. ［In case the tuition is revised, the new fee is applied from the time of the revision.］
	Annual total	535,800	

（Note） The amounts quoted above apply to 2023.

〔Note〕
(1) The admission of applicants who fall under the following items may be revoked.

(A) Applicants who made a false declaration
(B) Applicants who did not meet the qualification requirements

(2) The admission fee already paid will not be returned for any reason.

(3) Admission fee and tuition fee are not required for Japanese government-sponsored international students who will continue to be so after enrollment.

8. Eligibility Screening

Those who intend to apply under the requirements "2. Eligibility Screening (7) or (8)" will be screened by the following documents submitted.

(1) Documents necessary for screening

(A) Application Form for Examination of Qualification: the application form designated by the Graduate School of System Informatics (Form No. 10)

(B) Graduation certificate created by the head of faculty or the principal of the university you graduated from.

(C) Curriculum Vitae: the form designated by the Graduate School of System Informatics (Form No. 2).

(D) History of research: created by immediate manager or representative of education/research institute or company where the research was conducted. If such a certification is unavailable, an application written by the applicant can substitute it. Use the form designated by the Graduate School of System Informatics (Form No. 11).

(E) Research experience (A4): the outline of a thesis that is "an equivalent of master's thesis". A set of copies written in both Japanese (approx. 2,000 characters) and English (approx. 1,200 words), with a cover sheet designated by the Graduate School of System Informatics (Form No. 12). For foreign applicants, an English copy alone is sufficient.

(F) Materials of research achievements: Index of thesis and separate print (photocopy acceptable), which are the basis of the research achievements, along with references of other achievements, if any. In case of collaborative research, attach the material clearly indicating the portion the applicant was in charge.

(G) Research proposal (A4): a copy of a report indicating the field and research the applicant would like to explore, written either in Japanese (approx. 2,000 characters) or English (approx. 1,200 words) with a cover sheet designated by the Graduate School of System Informatics (Form No. 7).

(H) A self-addressed envelope (23.5cm long×12cm wide with a 354 yen stamp)

Note that those who have completed a 6-year course of medical college, dental college, or veterinary medicine are not required to submit the abovementioned (D), (E) and (F).

(2) Period and place for submission

Your application documents must be submitted in person or mailed (simple registered mail marked "Application Form for Examination of Qualification for the Doctoral Program of Graduate School of System Informatics" in red on the envelope) by Monday, June 19, 2023, to the Student Affairs Section of the Graduate School of Engineering.

Office hours (for those who hand in): Monday through Friday: 9:00-11:30 & 13:00-16:00

(3) Announcement of the screening results

Successful applicants will be notified of the result by Friday, Tuesday, July 4, 2023.

9. Others

1. Admission Fee Payment Exemption

Applicants recognized as having extreme difficulties in making the payment of the admission fee who fall under any of the following categories and make the relevant

application may be exempted from the payment of all or half the admission fee upon screening (low income does not automatically qualify applicants for the exemption).

(1) The person mainly responsible for paying school expenses for the applicant having passed away within the year prior to admission.

(2) The applicant or the person mainly responsible for paying school expenses for the applicant having suffered from flood or storm damage within the year prior to admission.

(3) The applicant having a reason equivalent to either of the above-mentioned that is recognized by the University.

2. Admission Fee Payment Deferral

Applicants who fall under any of the following categories and make the relevant application may be able to defer payment of the admission fee for a certain period upon screening (subject to confirmation by Kobe University).

(1) Applicants, for whom payment by the payment deadline has become difficult due to financial reasons, and who are recognized as having excellent academic records.

(2) Applicants for whom payment by the payment deadline has become difficult because the person mainly responsible for paying school expenses for the applicant has passed away within the year prior to admission.

(3) Applicants for whom payment by the payment deadline has become difficult because the applicant or the person mainly responsible for paying school expenses for the applicant has suffered from flood or storm damage within the year prior to admission.

(4) Applicants for whom payment by the payment deadline has become difficult due to unavoidable circumstances other than indicated above.

3. Tuition Fee Payment Exemption

Applicants who fall under any of the following items and make the relevant application may be exempted from the payment of all or half of the tuition fee upon screening.

(1) Applicants recognized as having difficulty in making the payment due to financial reasons and having excellent academic records.

(2) Applicants, except those who fall under (1), recognized as having extreme difficulty making the payment due to any of the following circumstances.

i The person mainly responsible for paying school expenses for the applicant having passed away within a year prior to admission (when concerning the exemption of tuition fee of the term of the admission).

ii The applicant or the person mainly responsible for paying school expenses for the applicant having suffered from flood or storm damage within a year prior to admission (when concerning the exemption of tuition fee of the term of the admission).

iii The applicant having a reason equivalent to either of the above-mentioned that is recognized by the University.

4. Handling of personal information

(1) Kobe University complies with legislation such as the “Act on the Protection of Personal Information Held by Independent Administrative Legal Entity” in using applicants’ personal information, and handles it based on the “Guideline on the Control of Personal Information Held by Kobe University.”

(2) Personal information including the individual results of screening shall be used for screening (application procedures, conducting screening), announcement of successful applicants, enrollment procedures, future screening methods, and surveys/research aimed at improving university education. The results of these surveys/research will be published

without information that could identify specific individuals.

(3) The personal information of enrolled students provided for the application will be used for supporting the students after enrollment (health management, tuition fee exemption or scholarship application), educational purposes (registration, academic instruction), tuition-fee related matters, and other corresponding work.

(4) Part of these operations may be outsourced to an agency (hereafter referred to as "Agency"). In cases where operations are outsourced, all or part of the personal information provided will be provided to such an Agency under a nondisclosure obligation within a certain limit necessary for the Agency to execute the operations.

5. Control and Prevention of Infectious Diseases

Submission of a certificate demonstrating inoculation and an antibody test against measles and rubella:

Kobe University has implemented the *Measles and Rubella Registration Policy*, and all newly enrolled Kobe University students must submit one of the following three certificates (①, ②, or ③) to prevent a possible outbreak of measles and rubella on campus.

Please note that students admitted into the following schools should submit either ① or ③: School of Medicine (Faculty of Medicine and Faculty of Health Sciences),the Graduate School of Medicine, or the Graduate School of Health Sciences.

① A vaccination certificate to prove that you were inoculated against measles and rubella (twice each after one year of age) .

② A vaccination certificate to prove that you were inoculated with measles and rubella vaccines each within the last five years (since April 2018).

③ An antibody certificate verifying that you have sufficient antibody titer in your blood (refer to the chart next page) to prevent the development of measles and rubella, based on the results of an antibody test performed within the last five years (since April 2018).

＊ For ① and ②, it can be a combined vaccine of measles and rubella vaccines (e.g., MR vaccine).

＊ For ① and ②, the certificate must be issued by an accredited medical institution,and state the type of vaccine and the date of inoculation.

＊ For ③, the certificate must specify the measuring method and the measured values of antibody titer in your blood (refer to the next page), and it must satisfy the judging standard listed in the chart. A blood test report sheet itself can be accepted for submission.
If the antibody titer in your blood is insufficient, you must receive the necessary vaccination, and submit either ① or ②.

＊ You may submit a combination of ①, ②, and ③ (e.g., ① for measles, and ③ for rubella).

＊ If the antibody titer level is below requirements, yet you cannot be inoculated with vaccines for some reason (e.g. illness or body composition), please submit an official document (for example, a certificate issued by the doctor) explaining why.

<Submission Period and Place of Submission>

・All successful undergraduate and graduate applicants enrolling in April.
Submit the certificate when you register at the Medical Center for Student Health (Rokkodai) during your routine medical check-up scheduled for early April.

・Successful applicants enrolling in October:
Submit the certificate when you register at the Medical Center for Student Health (Rokkodai) during the routine medical check-up scheduled for mid-late October.

Measuring Methods and Judging Standards for Protective Antibodies in Blood

	Measuring Method	Judging Standard	Remarks
Measles	IgG－EIA method PA method NT method	8.0 ≦ positive 256x ≦ positive 4.0x ≦ positive	Positive result by one of these three methods
Rubella	HI method IgG－EIA method	32x ≦ positive 8.0 ≦ positive	Positive result by one of these two methods. (HI method is recommended)

Make sure the above methods are followed when the antibody titer is measured in your blood. The protective antibody value differs according to the measuring method used. Please note that **the judging standards are higher than the usual standards used at medical institutions.**

Before you visit a medical institution, please make an appointment and confirm that the antibody test and/or the vaccine you need are available at that institution.

When you visit a doctor at a medical institution, make sure you present this guidebook so your doctor can issue the necessary certificate(s). (Please make sure you confirm with your doctor the measuring methods and judging standards when measuring the antibody titer in your blood.)

＊ Points to Consider when Submitting a Certificate:

① Please submit the original certificate and one set of copies (A4 size).

② If the certificate is written in a language other than Japanese or English, please attach a document that shows either a Japanese or English translation.

For further information, please refer to:

Medical Center for Student Health, Kobe University Tel: 078-803-5245

Student Support Division, Student Affairs Department, Kobe University Tel: 078-803-5219

Payment Methods of the Entrance Examination Fees for the Doctoral Programs of Kobe University Graduate School of System informatics from a Location Overseas

Please access the Application Fee Payment System of Kobe University from the URL shown below or the QR code, and pay with a credit card or Alipay.
The credit card holder does not have to be the applicant, but please be sure to enter the applicant's information in the Customer information field.
Please print the email of payment completion and attach it to the application form.

https://tinyurl.com/y2s4p8gl

【Items】

Application fee　¥30,000

Remittance fee　¥660

【Credit cards accepted by Kobe University's payment processing system】

◎Special Education System for Students Entering From Workplace

Recently, increasing numbers of engineers and researchers in the workforce wish to continue education and training as well as obtaining doctoral degrees in graduate school. However, education programs of graduate schools usually require them to spend time away from their workplace to focus on the graduate program for three years, which is likely to limit their learning opportunities. On the other hand, the "Graduate School Foundation Standard, Article 14" stipulates that "When special educational measures are recognized as necessary in the programs of the Graduate School, appropriate educational measures can be taken such as providing classes or research guidance during night or certain periods." considering the students from the workplace. Based on these backgrounds, the Doctoral Program of the Graduate School of System Informatics has implemented special educational measures as stipulated by the statement.

The following items summarize the program.

1. Part of class by a faculty member upon an agreement of the member, and part of research guidance by academic supervisor upon an agreement of the supervisor, can be provided during night or a certain period.
2. If the academic supervisor recognizes that the thesis is making good progress, and that superior facilities or equipment for the research are provided in the relevant company where outstanding performance can be expected, the student can conduct research within the company.

II Overview of the Doctoral Program of the Graduate School of System Informatics

1. Philosophy and Features of Curriculum

Our Doctoral Program promotes education and research for fostering researchers, higher education and research facility faculty members, and skilled professionals with advanced independent research skills, high creativity, and an international mindset for identifying, exploring and resolving problems. To this end, the program establishes rigorous courses related to the student's doctoral thesis, providing guidance in relation to investigational research, identifying problems, research planning, research implementation, research results organization, and methods for solving unresolved issues. The program also introduces a system of professional courses taught by multiple faculty members as well as cross-graduate-school courses, thereby fostering human resources equipped with advanced expertise and a broad perspective.

2. Features of Doctoral Program Education

The following explains the features of the curriculum we offer at the Doctor's Degree Program of the Graduate School of System Informatics.

Students from Workforce (Complying with the Graduate School Establishment Standard Article 14: Special Case)
We are willing to accept students from the workforce in the Doctoral Program with the aim to fostering engineers equipped with a variety of highly advanced professional skills in System Informatics. To help such students learn while at work, we provide a system complying with the "Special Case of Education Based on School Establishment Standard, Article 14."

Measures Taken for New Students Enrolled in the Doctoral Program
We provide course guidance at the time of enrollment to explain the basic philosophy of the curriculum, and the organization of the courses, so students can fully be aware of the requirements necessary for course completion. In particular, students who do not have a Master's Degree in System Informatics are instructed to enroll in some courses in the Master's Program if considered necessary, depending on the kind of master's degree and the background of the student. As the courses of the doctoral program are closely related to the research subjects given in each education and research field, students are advised to mainly enroll in advanced studies offered by multiple faculty members in the student's affiliated course.

Doctoral Degree Accreditation Process
Research progress presentations are conducted for research concepts, research progress, and future research plan during both the 1st year and 2nd year to instruct the students to create an appropriate doctor's thesis. In the 3rd year, the research result presentation is conducted. If the research results are acknowledged as superior, the student can proceed to submit the doctoral thesis and be reviewed (including the doctoral thesis presentation). A concerted effort is made in conducting research progress presentations, research results presentations, and the doctoral thesis presentation so that the Graduate School of System Informatics, when necessary, can be involved in guiding the students' research. For those who finish early, the research result presentation and the doctoral thesis presentation are conducted during the 1st or the 2nd year.

3. Department of the Graduate School of System Informatics

The Graduate School of System Informatics consists of a department: System Informatics.
The Department of System Informatics first pursues fundamental theories and methodologies for analyzing, designing, constructing, and operating increasingly large and complex systems. In doing so, the department does not specialize in specific technological fields such as mechanics, electricity, or information but deals logically, scientifically, and practice with concepts and functions common to various systems, integrates software and hardware technologies, pursues the coupling of the real world and the information world, and conducts interdisciplinary education and research on theories and technologies from the foundation of systems to their integration. The Department of System Informatics conducts interdisciplinary education and research on theory and technology, from the foundations of systems to their integration. The Department of System Informatics aims to pioneer and develop new academic fields of information science and technology that will contribute to an advanced information society. For this purpose, education and research are not simply focused on computer programming but also on information systems, which are organic combinations of computers, networks, and their contents, as well as on media and intelligence as contents, to construct a fundamental mathematical theory of information, to explore new methodologies of information processing, and to develop advanced information application technologies. The Department of System Informatics also offers a well-balanced education and research program that includes the development of fundamental mathematical theories of information, exploring new information processing methodologies, and advanced information application technologies. In addition, the

Department of System Information Science pursues theories and methodologies for scientific and technological exploration through computational approaches, as well as large-scale simulation theories and fundamental technologies that support these theories and methodologies. For this purpose, education and research are conducted into the technical foundations of ultra-high-speed and massively parallel computing systems, and the fundamentals of simulation such as mathematical modeling, simulation, and visualization, as well as the industrial applications and social contributions of computational science, including the understanding and clarification of natural phenomena and the prediction of unknown phenomena and events through simulation.

4. Divisions, Research Topics, and Faculty Members **As of October 1, 2023**

Divisions	Research Topics	Faculty Members
Systems Planning	Operational Research, Production Systems Engineering, Social Systems Engineering, Optimisation, Multi-Agent System, Management Engineering, Decision Support Theory, Service Engineering, System Simulation, Medical Engineering	Kaihara Toshiya ■ Kokuryo Daisuke
Applied Optics	Instrumentation Optics, Information Photonics, Computational Optics, Physical Optics, Image Processing, Optical Tomography, Optical Data Storage, 3D Display System, Optical Supercomputing, Quantum Information Science	Matoba Osamu Nitta Kouichi
Systems Control	Environment Adaptive Robotics, Cognitive Motion, Human Interface, Bio-mimetic System, Care Support Engineering, Computational Robotics, Computational Linguistics	Luo Zhi-Wei Quan Changqin
Mathematical System Analysis	Distributed Parameter Control Systems Theory, Infinite Dimensional Dynamical Systems, Operator Theory, Nonlinear PDEs, Mathematical and Theoretical Biology, Robust Control Theory, Nonlinear Systems Theory, Large Scale and Hybrid Systems Theory, Control System Design via Numerical Optimization, Time Delay Systems	Sano Hideki Masubuchi Izumi Kuniya Toshikazu Wakaiki Masashi
System Analysis	Intelligent Robotics, Sensor Fusion, Robot-Human Interaction, Tele-Operation System, Soft Computing, Measurement engineering, Biological information measurement, Nondestructive testing	Kobayashi Futoshi Nakamoto Hiroyuki
Operation Theory of Cyber Security	Intelligent Decision Making, Virtual Reality, Mixed Reality	Hatono Itsuo Yoshihiro Ban
Intelligent Systems	Medical Engineering, Computer Aided Diagnosis and Treatment	Etsuko Kumamoto
Mathematical Logic and Statistics	Mathematical Logic, Mathematical Statistics, Foundations of Mathematics, Foundations of Informatics, Axiomatic Set Theory, Model Theory, Proof Theory, Computability Theory, Algebraic Combinatorics, Discrete and Computational Geometry	Kikyo Hirotaka Brendle Joerg Kikuchi Makoto Sakai Hiroshi Sawa Masanori Kurahashi Taishi
Software Science	Systems Design, Service Systems, Agent Systems, Combinatorial Optimization, Logic Programming, Constraint Programming, SAT	Fujii Nobutada Soh Takehide

Divisions	Research Topics	Faculty Members
Telecommunications	Information and Communication Systems Control, Information and Communication Systems Evaluation, Information and Communication Systems Applications, Parallel and Distributed Processing, System Software, Blockchain, Bioinformation Processing	Ohta Chikara
Knowledge and Information Processing	Smart Agriculture, Bioinformatics, Small Data, Data Mining, Machine Learning, Time Series Data Analysis, Network Analysis, Image Processing	Ohkawa Takenao
Media Informatics	Speech/Image/Movie Recognition, Media Integration, Semantic Understanding, Dialogue/Conversation Processing, Intelligent Communication, Universal Communication, Disaster Information Processing, Pattern Recognition	Takiguchi Tetsuya Takashima Ryoichi
Emergent Computing	Emergent System, Autonomous Decentralized System, Mathematical Programming Model, Agent Model, Adaptation/Learning Algorithm, Scheduling, Interaction, Nonholonomic System, Mobile Robot, UAV, Manipulator Dynamics	Tamaki Hisashi Urakubo Takateru
Basics of Computational Science	Numerical Analysis, Finite Difference Method, Finite Element Method, Parallel Algorithms, Large Scale Simulation, Program Tuning Tools, Discrete Mechanics, Differential Geometry, Global Analysis, Mathematical Engineering	Yokokawa Mitsuo ■
Computational Fluid Dynamics	Computational Fluid Dynamics, Finte Volume Method, Massively Parallel Simulation, Coupled and Unified Simulation, Multi-objective Optimization, Machine/Deep Learning, Heat Transfer, Complex and Complicated Turbulence, Combustion Flow, Moving Boundary Method, Applied Aerodynamics, Aeroacoustics, Industrial Applications, Vehicle Aerodynamics, Infection, Bio-fluid Mechanics	Tsubokura Makoto Bale Rahul
Simulation Techniques	Yin-Yang Grid and Its Applications, Large Scale Simulations, Computational MHD and its Visualizatons, Geodynamo, Big Data Visualization, Multivariate Data Visualization, Visual Data Analytics	Kageyama Akira Sakamoto Naohisa
Computational Molecular Engineering	Massively Parallel Computing Algorithms, Explicitly Correlated Electronic Structure Theory, Strongly Correlated Electronic States, Scalable Molecular Orbital Theory, Model Space Quantum Monte Carlo, QM/MM Methods, New Energy	Ten-no Seiichiro Tsuchimochi Takashi
Computational Biology	Biomolecular System, Ab Initio Simulation, Multiscale Simulation, Large-Scale Parallel Computation, Medical and Pharmaceutical Applications, Molecular Dynamics Method, Molecular Orbital Method, Monte Carlo Method	Tanaka Shigenori ■ Mori Yoshiharu
Computational Space Science and Engineering	Numerical Simulations on the Lunar and Planetary Environments, Satellite-Plasma Interaction, Numerical Simulations on Ion Beam Appplication, Development of Plasma Particle Simulation Method	Usui Hideyuki Miyake Yohei
Applied Robot Science (Collaborative Program)*	Manufacturing System, Instrument and Control System, Motion Planning System, Robot Control System, Human Interface System	
Social Robotics (Collaborative Program)*	Human-Robot Interaction Technology, Voice Interaction Technology, Haptic Interaction Technology, Communication Media, Partner Media, Media Presentation Technique, Multilingual Speech Translation, Situation Recognition Technology, Network Robotics	

Divisions	Research Topics	Faculty Members
Integrated Intelligence (Collaborative Program)*	Machine learning, Artificial intelligence, Statistical modeling, Pattern recognition, Bayesian statistics, Intelligent information processing, Bigdata analysis, Optimization	
Applied Computational Science (Collaborative Program)*	Earth Simulator, High-Performance Computing, Multiscale Simulation, Earth Sciences, Lithosphere Dynamics, Earthquakes, Plate Motion, Particle Simulation Method, Scientific Visualization, Evolution of the Earth's Deep Interior, Large Scale Linear and Nonlinear Iterative Solver, Data-driven, Inverse Problem, Bayesian estimation, Sparse Modeling	
Large Scale Computational Science (Collaborative Program)*	Simulation of Complex Climate System , Numerical Software Library, Quantum Material Science, Lattice QCD, Biosimulation, Cellular Simulation	

*) These divisions cannot be chosen as part of the doctoral course.

■ The faculty member is scheduled to retire in March, 2025.