*This document is a translation from the authoritative Japanese version; this document is for reference purposes only.

2022 Guide to Entrance Examinations
Master's/Doctoral Program
Department of Systems Innovation

Graduate School of Engineering, The University of Tokyo

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Graduate School of Engineering, The University of Tokyo
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Tel: +81-3-5841-2900 (English-speaking staff)

Contact us: http://www.sys.t.u-tokyo.ac.jp/contact/

Website: http://www.sys.t.u-tokyo.ac.jp

2022 Master's Program

This document contains important information regarding entrance examinations at the Department of Systems Innovation, which is supplementary to the Guidelines for Applicants to the 2022 Master's Program, provided by the University of Tokyo's Graduate School of Engineering. This document explains about examination subjects, schedules, and other related materials.

This year, due to the situation regarding the spread of COVID-19, the entrance examination of our department consists of document screening and on-site and online examinations. Depending on the circumstances, however, the examination style, format, or other details are subject to change. Further information will be notified on the Department of Systems Innovation website (http://www.sys.t.u-tokyo.ac.jp) , etc..

1 Entrance Examination

(1) Examination Subjects and Schedules

Date	Examination Subject(s) & Times	Notes
August 28 (Sat)	13:00~ (1) Connection and operation check for the Online Written Exam	For eligible applicants who pass the document screening(2) Refer to footnotes(3), (4) below for the online written examination
August 29 (Sun)	9:00~ (1) Written Examination: Problems Related to Systems Innovation (3), (4)	
August 30 (Mon) ~ September 3 (Fri)	9:00~ Online Oral Examination (ca. 20 minutes per person)	For ALL eligible applicants who pass the document screening(2)

Footnotes:

(1) It is planned to finish around 15:30, however, the schedule (including the start time) is subject to change due to various reasons. Please refer to the department website.

(2) Only applicants who pass the document screening are eligible to take the online written and oral exams.

(3) More details about the written exam (including information about the exam questions) will be announced on the department website on or before May 29 (Sat).

(4) Upon comprehensive consideration of the results of the document screening and English examination, exceptional applicants may be exempt from taking the written exam.

(2) Examination Procedures

a) Document Screening

Screening of applicants for admission will first be conducted by evaluating application documents (more specifically, the applicant's undergraduate performance and the Motivation Letter with the Research Proposal, refer to 2-(2) below) submitted by the applicant. Applicants will be notified of the results of the document screening by August 26 (Thu) via the department website, etc.. Subsequently, written and oral examinations will be held only for applicants who successfully pass the document screening. Applicants who do not pass the document screening will not be invited to take the exam.

b) English Examination

Official TOEFL PBT or TOEFL iBT (including Special Home Edition) scores submitted by the applicant will be used to evaluate the applicant's English skills. For details, refer to the "Notice regarding Foreign-language (English) Examinations in 2022 (Master's Program)" provided by the University of Tokyo's Graduate School of Engineering. The Department of Systems Innovation only accepts official scores from a single test date (Test Date Scores), not "MyBest" Scores. Please refer to 1-(3)-g below.

c) Written Examination
In principle, applicants residing in Japan will take the on-site written examination at the Hongo campus, the University of Tokyo, while other applicants will take the online written examination. Details including instructions, schedule and other notifications of the online written exam will be notified via the department website, etc. by August 27 (Fri). However, considering the spread of COVID-19, some or all applicants including applicants residing in Japan may be commuted to take the online examination. If we decide that applicants residing in Japan should take the online exam, they will be notified via the department website, etc.. Upon comprehensive consideration of the results of the document screening and the English examination, exceptional applicants with the highest marks may be exempt from taking the written exam. Applicants who wish (or do not wish) to be subject to this exemption should fill in the corresponding part of the Declaration of Preferred Supervisors (page 5 of this document).

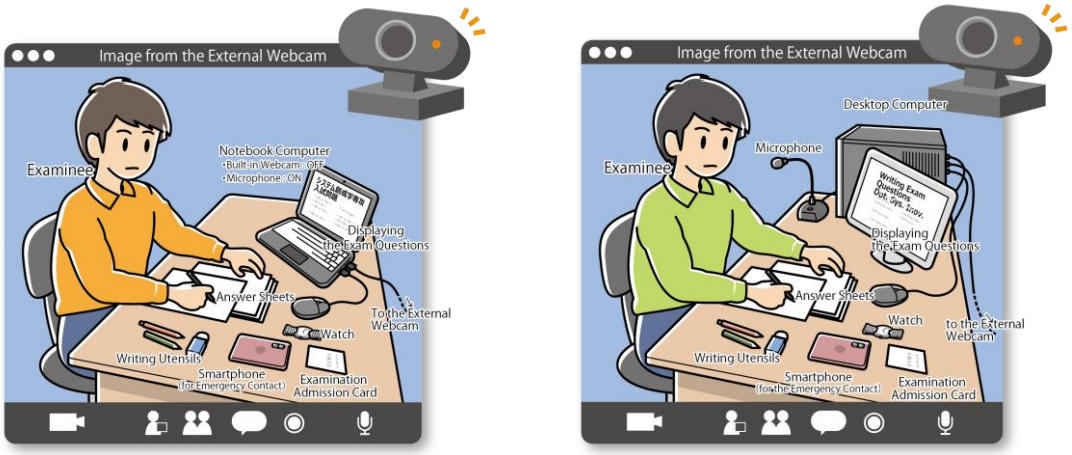
d) Oral Examination
In principle, the Oral Exam will be held online for all candidates. Details, including instructions, timetable, and other notifications of the online oral exam, will be notified via the department website, etc., by the end of the written exam on August 29 (Sun). All applicants, including those exempt from taking the written exam, are required to take the online oral exam. Admission decisions will be based on comprehensive consideration of the results of all exams including the oral exam (including for the applicants exempt from taking the written exam).

(3) Notes

a) The application fee will NOT be refunded under any circumstances, even for applicants who do not pass the document screening stage.
b) In the on-site exam room, applicants are requested to wear masks and to disinfect their hands frequently using sanitizer. The precautions and instructions in the exam room will be posted on the department website, etc..
c) Even applicants residing in Japan may take the online written exam or take the on-site exam in a separate room if they fall into one of those categories; those who have tested positive in the PCR test, those who are suspected of being infected, those who are restricted from going out by a doctor or local government due to medical history, or those who have other special issues. Any applicants who fall into any of the above categories should notify the department as soon as possible. Specific procedures will be posted on the department website, etc.. Especially, those who have a fever on the day of the written exam must contact the department immediately. No alternative exam schedule will be offered.
d) For the online written exam, the applicant must provide a PC and a smartphone, both with a camera, a microphone and stable Internet connection. As shown in Figure 1, it is necessary to create an environment that allows supervisors to constantly monitor the applicant's screen and hands. Applicants residing in Japan are also asked to prepare those items in case the exam has to be administered online, as noted in 1-(2)-c. For the online oral exam, the applicant must provide a PC with an external web camera, microphone and stable Internet connection. In particular, those who plan to take the oral exam from a hotel should confirm the availability of a suitable Internet connection with the hotel before the exam. Further notifications including other necessary items will be notified via the department website, etc..
e) All eligible applicants scheduled for the online written exam are required to perform the connection and operation test on August 28 (Sat). Details including the instructions and schedule will be notified via the department website, etc. by August 27 (Fri).
f) Further notifications about the online written exam will be notified via the department website, etc..
g) TOEFL scores must arrive no later than August 12 (Thu). Applicants are asked to take the TOEFL test and submit scores as early as possible, as some students fail to meet the deadline every year. Any applicants who are unable to submit the TOEFL scores before the submission deadline due to unavoidable circumstances have to inform the Department of Systems Innovation of the situation (with specific explanation for the circumstance) no later than July 30 (Fri) (see the department homepage for the contact information). Depending on the circumstances, the TOEFL scores may be accepted after the deadline, or the applicant's English skill may be evaluated in a special manner.
h) Do not share the URL or the password, etc. for the online exams. Do not post any materials of the

exams on the Internet. Unless explicitly instructed otherwise by the examiner, taking photographs, capturing screenshots or making audio and video recordings is strictly prohibited during the online exams.

i) Please note that the written exam is scheduled on a weekend during the period of the Paralympics, and higher than normal hotel and transportation utilization rates are expected. Applicants are advised to make reservations as early as possible. In the event that the on-site written exam is commuted to online, it may be necessary to cancel hotel and transport reservation.



(a) Laptop PC (b)Desktop PC

Figure1 Test environment required for taking the online written exam

2 Required Documents

In addition to the “Entrance Examination Application Documents” listed in section six of the “Guidelines for Applicants to the 2022 Master Program (provided by the Graduate School of Engineering, The University of Tokyo)”, applicants must submit two other documents listed below to the office of the Department of Systems Innovation no later than July 21 (Wed). BOTH the electronic files (to be sent/uploaded on or before the due date) and paper copies (via postal mail, postmarked on or before the due date, as complement to the electronic files) must be submitted.

(1) Declaration of Preferred Supervisors

Fill out the Declaration of Preferred Supervisors form on page 5 of this document. This form can be downloaded from the department website. Please refer to the list of the faculty members and their research outlines on pages 12–14.

(2) Motivation Letter with Research Proposal

Applicants must submit a Motivation Letter and Research Proposal. In the letter, applicants should describe (in Japanese or English) their motivation to study at the Department of Systems Innovation together with their specific reason to choose the faculty member as their most preferred supervisor in the “Declaration of Preferred Supervisors”, and a coherent summary of an intended research project at the department. Applicants are required to use the prescribed format for this letter (which can be downloaded from the department website) and submit it as a PDF file. The letter should be prepared electronically and should not exceed two pages in length.

The above two documents should be submitted both electronically (as PDF files) and by postal mail (printed documents) to:

For electronic file: Information about the electronic file submission (including URL, etc.) will be notified via the department website, etc.
(should be sent/uploaded no later than July 21 (Wed))

For postal mail: Administration Office of the Department of Systems Innovation
Graduate School of Engineering, The University of Tokyo

Eng. Bldg. #3 (room 225), 7-3-1, Hongo, Bunkyo-ku, Tokyo 113-8656, Japan
Tel: +81-3-5841-6533, +81-3-5841-2900 (English-speaking staff)
(postmarked on or before July 21 (Wed))

Caution: The submission deadline and location are different from those for the “Entrance Examination Application Documents” and the TOEFL scores.
Note: The PDF files should be named as “Supervisors_(applicant_name).pdf” and “Motivation_(applicant_name).pdf”, respectively.

3 Others

(1) Enrollment in October 2021

Successful applicants can enroll in the master’s program in October 2021. If you would like detailed information about the requirements, please read the section one of the Guidelines for Applicants to the 2022 Master’s Program, provided by the Graduate School of Engineering, the University of Tokyo. If you will meet the requirements for eligibility between September 24 and September 30, 2021 and wish to enroll in September, please contact the following desk before you apply:

Graduate School Team, Administrative Division, School of Engineering, the University of Tokyo
7-3-1, Hongo, Bunkyo-ku, Tokyo 113-8656, Japan
Tel: +81-3-5841-6038, +81-3-5841-7747

(2) VISA application

Visa applications cannot be processed until after the applicants have been accepted for admission, and visa processing usually takes more than one month, so it will not be possible to issue visas before the October enrollment. Therefore, foreign applicants who need to apply for a visa should consider April enrollment.

(3) Application Schedule B

There is currently no schedule within the Department of Systems Innovation to hold winter entrance examinations (Application Schedule B) . This may be subject to change depending on the circumstances.

(4) If you have any further questions, please contact the Office of the Department of Systems Innovation (refer to the cover page of this document for contact information).

Declaration of Preferred Supervisors

(Master's Program, Department of Systems Innovation)

Please fill out the form and submit it to the Office of the Department of Systems Innovation both electronically (as a PDF file only) (should be sent/uploaded no later than July 21 (Wed)) and by postal mail (printed document) (postmarked on or before July 21 (Wed)) . Please keep a copy of your submitted form for your records. This format can be downloaded from the department website.

Name	
University (undergraduate)	
Faculty	
Contact Address	Postal code: Address: Tel:
Mobile phone: (For emergency contact)	
Email:	

(1) Referring to the list of faculty members on pages 12–14. Please fill out the form below indicating your preferred supervisors in order of preference.

(2) You can choose up to ten potential supervisors, but you do not need to fill out all ten. If spaces are left blank, it will be considered an indication that you do not wish to identify any further preferred supervisors.

(3) This process aims to match students with their first choice supervisor. However, because each supervisor can only accept a limited number of students, it is possible you may not be assigned to your first choice.

(4) If you nominate only a few very popular supervisors, you may be assigned to a supervisor not included in your preferred supervisor list. If that is the case, would you consider accepting the placement under the assigned supervisor? Please check one of the boxes below.

☐ Yes, I will accept the placement.
☐ No. I will not accept the placement and will decline admission.

(5) Upon comprehensive consideration of the results of the document screening and the English examination, exceptional applicants with high marks may be exempt from taking the written exam. If you are considered to be eligible, would you wish to be exempt from the written exam? Please check one of the boxes below.

☐ Yes, I wish to be exempt from taking the written exam.
☐ No. I do not wish to be exempt and will take the written exam.

Order of Preference	1	2	3	4	5	6	7	8	9	10
Supervisor No.										

2022 Doctoral Program

This document contains important information regarding entrance examinations at the Department of Systems Innovation, which is supplementary to the Guidelines for Applicants to the 2022 Doctoral Program, provided by the University of Tokyo's Graduate School of Engineering. This document explains about examination subjects, schedules, and other related materials.

This year, due to the situation regarding the spread of COVID-19, the entrance examination of our department consists of document screening and on-site and online examinations. Depending on the circumstances, however, the examination style, format, or other details are subject to change. Further information will be notified on the Department of Systems Innovation website (http://www.sys.t.u-tokyo.ac.jp).

1 Primary Examination

(1) Examination Subjects and Schedules

Date	Examination Subject(s) & Times	Notes
August 28 (Sat)	13:00~ (1) Connection and operation check for the Online Written Exam	For eligible applicants who pass the document screening(2) Refer to below footnotes(3), (4), (5) for the online written examination
August 29 (Sun)	9:00~ (1) Written Examination: Problems Related to Systems Innovation (3), (4), (5)	
August 30 (Mon) ~ September 3 (Fri)	9:00~ Online Oral Examination (ca. 30 minutes per person)	For ALL eligible applicants who pass the document screening(2)

Footnotes:

(1) It is planned to finish around 15:30, however, the schedule (including the start time) is subject to change due to various reasons. Please refer to the department website.

(2) Only applicants who pass the document screening are eligible to take the written and oral exams.

(3) More details about the written exam (including information about the exam questions) will be announced on the department website by May 29 (Sat).

(4) Upon comprehensive consideration of the results of the document screening and the English examination, exceptional applicants may be exempt from taking the online written exam.

(5) Applicants who have completed or are expected to complete a master's program (or professional degree program) at one of the following graduate schools in the University of Tokyo do not need to take the written exam.

- Graduate School of Engineering
- Graduate School of Frontier Sciences
- Graduate School of Information Science and Technology
- Graduate School of Interdisciplinary Information Studies

(2) Examination Procedures

a) Document Screening

Screening of applicants for admission will first be conducted by evaluating application documents (more specifically, documents described in 2-(c) or 2-(d) as well as the applicant's academic performances during undergraduate and graduate school) submitted by the applicant. Applicants will be notified of the results of the document screening by August 26 (Thu), via the department website,

etc.. Subsequently, written and oral examinations will be held only for applicants who successfully pass the document screening. Applicants who do not pass the document screening will not be invited to take the exam.

b) English Examination
Official TOEFL PBT or TOEFL iBT (including Special Home Edition) scores submitted by the applicant will be used to evaluate the applicant's English skills. For details, refer to the "Notice regarding Foreign-language (English) Examinations in 2022 (Doctor's Program)", provided by the University of Tokyo's Graduate School of Engineering. The Department of Systems Innovation only accepts official scores from a single test date (Test Date Scores), not "MyBest" Scores. For applicants who are unable to submit their TOEFL scores before the submission deadline due to unavoidable circumstances, please refer to 1-(3)-g below.
Note: Applicants who have completed or are expected to complete a master's program (or professional degree program) at the University of Tokyo will be exempt from the English examination (thus, do not need to submit the TOEFL scores).

c) Written Examination
In principle, applicants residing in Japan will take the on-site written examination at the Hongo campus, the University of Tokyo, while other applicants will take the online written examination. Details including instructions, schedule and other notifications of the online written exam will be notified via the department website, etc. by August 27 (Fri). However, considering the spread of COVID-19, some or all applicants including applicants residing in Japan may be commuted to take the online examination. If we decide that applicants residing in Japan should take the online exam, they will be notified via the department website, etc.. Upon comprehensive consideration of the results of the document screening and the English examination, exceptional applicants with the highest marks may be exempt from taking the online written exam. Applicants who wish (or do not wish) to be subject to this exemption should fill in the corresponding part of the Declaration of Preferred Supervisors (page 12 of this document).
Note: Applicants who have completed or are expected to complete master's program (or professional degree program) at the Graduate School of Engineering, the Graduate School of Frontier Sciences, the Graduate School of Information Science and the Technology, Graduate School of Interdisciplinary Information Studies in the University of Tokyo do not need to take the online written exam.

d) Oral Examination
In principle, the Oral Exam will be held online for all candidates. Details including instructions, timetable and other notifications of the online oral exam will be notified via the department website, etc. by the end of the online written exam on August 29 (Sun).

(3) Notes

a) The application fee will NOT be refunded under any circumstances, even for applicants failed to pass the document screening stage.
b) In the on-site exam room, applicants are requested to wear masks and to disinfect hands frequently using sanitizer. The precautions and instructions in the exam room will be posted on the department website, etc..
c) Even applicants residing in Japan may take the online exam or take the on-site exam in a separate room if they fall into any of those categories; those who have tested positive in the PCR test, those who are suspected of being infected, those who are restricted from going out by a doctor or local government due to medical history, or those who have other special issues. Any applicants who fall into any of the above categories should notify the department as soon as possible. Specific procedures will be posted on the department website, etc.. Especially, those who have a fever on the day of the written exam must contact the department immediately. No alternative exam schedule will be offered.
d) For the online written exam, the applicant must provide a PC and a smartphone, both with a camera, a microphone and suitable Internet connection. As shown in Figure 1, it is necessary to create an environment that allows supervisors to constantly monitor the applicant's hands and screen. Applicants residing in Japan are also asked to prepare those items in case the exam has to be

administered online, as noted in (2) c. For the online oral exam, the applicant must provide a PC with an external web camera, a microphone and stable Internet connection. In particular, those who plan to take oral exam from a hotel should confirm the availability of a suitable Internet with the hotel before the exam. Further notifications including other necessary items will be notified via the department website, etc..

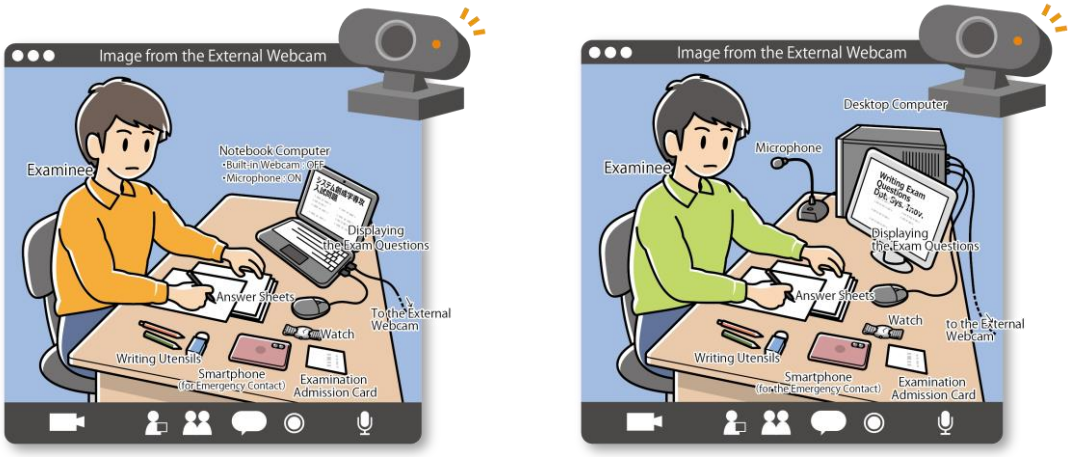
e) All eligible applicants scheduled for the online written exam are required to perform the connection and operation test on August 28 (Sat). Details including instructions and schedule will be notified via the department website etc. by August 27 (Fri).

f) Further notifications about the online written exam will be notified via the department website, etc..

g) TOEFL scores must arrive no later than August 12 (Thu). Applicants are asked to take the TOEFL test and submit scores as early as possible, as some students fail to meet the deadline every year. Any applicants who are unable to submit the TOEFL scores before the submission deadline due to unavoidable circumstances have to inform the Department of Systems Innovation of the situation (with specific explanation for the circumstance) no later than July 30 (Fri) (see the department homepage for the contact information). Depending on the circumstances, the TOEFL scores may be accepted after the deadline, or the applicant's English skill may be evaluated in a special manner.

h) Do not share the URL or the password, etc. for the online exams. Do not post any materials of the exams on the Internet. Unless explicitly instructed otherwise by the examiner, taking photographs, capturing screenshots or making audio and video recordings is strictly prohibited during the online exams.

i) Please note that the written exam is scheduled on a weekend during the period of the Paralympics, and higher than normal hotel and transportation utilization rates are expected. Applicants are advised to make reservations as early as possible. In the event that the on-site written exam is commuted to online, it may be necessary to cancel hotel and transport reservation.



(a) Laptop PC (b)Desktop PC

Figure1 Test environment required for taking the online written exam

(4) Oral Examination

a) Please explain your master's thesis research (or research achievement equivalent to a master's thesis), and your plans for your doctoral research. Your knowledge in your field of specialization, preparedness for doctoral work, and ability to conduct research will be evaluated.

b) Applicants are supposed to give an online presentation (above 1-(4)-a) by screen-sharing their electronic presentation materials (such as PowerPoint, Keynote, PDF, etc.).

c) Applicants who wish to enroll in September 2021 and who have completed, or are expected to complete a master's (or professional) program by September 30, 2021, do not need to take the secondary oral examination described in 3. below. Primary and secondary oral examinations will be combined.

2 Required Documents

In addition to the "Entrance Examination Application Documents" listed in section seven of the "Guidelines

for Applicants to the 2022 Doctor Program (provided by the Graduate School of Engineering, the University of Tokyo)", applicants must submit the documents listed below to the Office of the Department of Systems Innovation by the designated due dates. BOTH the electronic files (sent/uploaded on or before the due date) and paper copies (via postal mail, postmarked on or before the due date: as complement to the electronic files) must be submitted. To prepare these documents, please consult thoroughly with your preferred supervisor.

a) All applicants
Declaration of Preferred Supervisors (page 12 of this document)
(Submission deadline: July 16 (Fri), 2021)

b) Only applicants who pass the document screening
A PDF file of the presentation materials you plan to use in the online oral exam. For this item ONLY, submission via postal mail is NOT required. Although the applicant can use any presentation software in the actual exam, the applicant is required to submit the presentation materials converted into PDF format.
(Submission deadline: August 28 (Sat), 2021)

c) Applicants taking only the primary examinations (primary oral examination)
① Summary of research to date (4 pages, A4 or US Letter; 1 copy)
② Doctoral dissertation plan (1 page, A4 or US Letter; 1 copy)
(Submission deadline: August 13 (Fri), 2021)

d) Applicants taking the secondary examination (combined primary and secondary oral examinations)
① Summary of research to date and doctoral dissertation plan (6 pages, A4 or US Letter; 1 copy)
② Copy of your master's thesis (or equivalent other document[s] illustrating research achievements) (1 copy)
③ List of research achievements (1 copy)
(Submission deadline: August 13 (Fri), 2021)

The above documents should be submitted both electronically (as PDF files) and by postal mail (printed documents) to:

For electronic file: Information about the electronic file submission (including URL etc.) will be notified via the department website etc.. (sent on or before the respective due dates)

For postal mail: Administration Office of the Department of Systems Innovation
Graduate School of Engineering, The University of Tokyo
Eng. Bldg. #3 (room 225), 7-3-1, Hongo, Bunkyo-ku, Tokyo 113-8656, Japan
Tel: +81-3-5841-6533, +81-3-5841-2900 (English-speaking staff)
(postmarked on or before the respective due dates)

Note 1) For submission via postal mail, all documents should be printed single-sided on A4 or US letter paper (no staple). The format of the abstract to be submitted conforms to the format of the lecture proceedings of the academic society to which each applicant belongs.
Note 2) The list of research achievements should be categorized by type, such as: academic journal publication, review, expository paper, presentation, etc..
Note3) The file names of the PDF documents should be simple, descriptive and marked with the applicant's name (for example, "research_plan_(applicant_name).pdf").
Note 4) The submission deadline and location are different from those for the "Entrance Examination Application Documents" and the TOEFL scores.

3 Secondary Examination

The secondary examination is an oral examination and will be administered to those who pass the primary examination (except applicants who meet the conditions described in 1-(4)-c). The examination will be

scheduled between late January and mid-February, 2022. Details will be notified to applicants at a later date.

4 Others

a) No winter entrance examinations (Application Schedule B) is currently scheduled by the Department of Systems Innovation, which is also subject to change depending on the circumstances.

b) Successful applicants can enroll in the doctoral program in October 2021. If you would like detailed information about the requirements, please read the Guidelines for Applicants to the 2021 Doctoral Program, Graduate School of Engineering, the University of Tokyo. If you will meet the requirements for eligibility between September 24 and September 30, 2021 and wish to enroll in September, please contact the following desk before you apply:

   Graduate School Team, Administrative Division, School of Engineering, the University of Tokyo
   7-3-1, Hongo, Bunkyo-ku, Tokyo 113-8656, Japan
   Tel: +81-3-5841-6038, +81-3-5841-7747

c) If you have any further questions, please contact the Department of Systems Innovation Office:

   Contact form: http://www.sys.t.u-tokyo.ac.jp/contact/
   Email: admission@sys.t.u-tokyo.ac.jp
   TEL: +81-3-5841-6533, +81-3-5841-2900 (English-speaking staff)
   URL: http://www.sys.t.u-tokyo.ac.jp

Declaration of Preferred Supervisors

(Doctoral Program, Application Schedule A, Department of Systems Innovation)

Please fill out the form and submit it to the Department of Systems Innovation Office by both electrically (as a PDF file only) (should be sent/upload no later than July 16 (Fri)) and postal mail (a printed document) (postmarked on or before July 16 (Fri)) . Please keep a copy of your submitted form for your records. This format can be downloaded from the department website.

Name	
University (undergraduate)	
University (postgraduate)	
Contact Address	Postal code: Address: Tel:
Mobile phone:	
Email:	

Upon comprehensive consideration of the results of the document screening and the English examination, exceptional applicants with high marks may be exempt from taking the online written exam. If you are considered to be eligible, do you wish to be exempt from the written exam? Please check one of the boxes below.

☐ Yes, I wish to be exempted from taking the written exam.
☐ No. I do not wish to be exempted and will take the written exam.

Name of preferred supervisor

Faculty Members and Outlines of their Research (1/3)

Supervisor's No.	Name of Supervisor	Research field
1	Kazuhiro AOYAMA Prof. (Research into Artifacts, Center for Engineering)	System Architecture Design, Product Family and Product Platform Design, Product Lifecycle Management (PLM), Model-Based System Design (MBSD), Project Management. Product Service System (PSS), Service Design, Human Centered Manufacturing System, Industry 4.0, Knowledge Management.
2	Kiyoshi IZUMI Prof.	(1) Financial informatics: Artificial market simulation; Financial text mining; AI application in finance. (2) Engineering based economics: Consumer data analysis; Movement data analysis; Marketing simulation. Those who want to join our laboratory should visit http://kinba.sakura.ne.jp.
3	Yukio OHSAWA Prof.	(1) Methods for discovering opportunities and risks from commercial, natural, and/or behavioral data, (2) Realizing cognition, thought, and decisions for innovating businesses in designed markets of data where strategies for combining/using/reusing data are communicated and created.
4	Yoji OKABE Prof. (Institute of Industrial Science)	Innovative health diagnostics of advanced composite structures for airplanes, Structural health monitoring, Non-destructive inspection, Fiber-optic ultrasonic sensing systems applicable to high-temperature environments, Internal damage detection using ultrasonic guided waves, Laser-ultrasonic visualization system.
5	Taira OKITA Assoc. Prof. (Research into Artifacts, Center for Engineering)	Digital twin of artifact systems by synthesizing inspections and computer science, machine-learning molecular dynamics (MD), multi-scale simulations (MD, kinetic Monte Carlo (kMC) etc.), MD-FEM concurrent coupling model, on-the-fly kMC, Non-destructive inspection techniques to detect material degradation at micro-scale.
6	Yasuhiro KATO Prof. (Frontier Research Center for Energy and Resources)	Discovery of deep-sea mineral deposits and space resources for rare-earths and base/rare/precious metals, Decoding of global environmental changes and material cycles during the whole history of the Earth, Design of deep-sea and space resource development.
7	Tomoya KAWASAKI Lecturer	Supply chain network simulation model, Warehouse distribution forecasting model, Logistics sensing, Transport/logistics bigdata analysis, Global value chain, Technological innovation and logistics systems, Transport/logistics network analysis
8	Tomoya KAWABATA Prof.	Optimization of future supply system of hydrogen and research of the reliability of transportation and storage of LH2, Nano-scale microstructural design for economic rationality based on fracture mechanisms using front-line technology, Optimum arrangement of material in building and civil engineering fields against huge earthquakes.
9	Taro KANNO Assoc. Prof.	Cognitive Systems Engineering (Human-Centered Systems Design & Management): Team Cognition, Organizational Simulation, Cognitive Data Analysis, Human Factors in Medical, Nursing, ATC, and Emergency Response. Sociotechnical Systems Resilience.
10	Daisuke KITAZAWA Prof. (Institute of Industrial Science)	Marine food production system, renewable energy utilization system and marine ecosystem preservation. Ocean space utilization. Environmental impact assessment. Interactions between the natural environment, marine organisms, and marine structures. Marine ecosystem model. Experiments on flexible structures and behavior of animals in water tank.
11	Takashi GODA Assoc. Prof.	Numerical algorithms (e.g., Monte Carlo, quasi-Monte Carlo and multilevel Monte Carlo methods): from theory to engineering applications, Machine learning, Uncertainty quantification, Global sensitivity analysis, Decision making, Value of information analysis, Other related applied mathematics and statistics
12	Seiichi KOSHIZUKA Prof.	Particle method for fluid dynamics (accuracy, speed, multi-phase, surface tension), useful simulation for human beings (industrial application, collaboration with companies, mixing tank, infiltration of rain water, droplet behavior), physics-based computer graphics (visualization, real-time, position-based), credibility of simulation (V&V)
13	Hajime KOBAYASHI Assoc. Prof.	Biotechnologies for energy conversion, production and resource utilization. Technological applications of microbial symbioses to energy-related industries. Electromethanogenic conversion of CO2. Energy-related environmental technologies (e.g. water treatment).
14	Kozo SATO Prof. (Frontier Research Center for Energy and Resources)	Sustainable Carbon Cycle (CCS, Geological Storage of CO2 and Bio-conversion, Monitoring, Assessment of Environmental Impacts), Energy Resources Development and Uncertainty (Value of Information, Decision Making, EOR/IOR), Simulation for Unconventional Resources (Shale Gas, FDM･BEM･CIP･LBM･MD).
15	Ryuichi SHIBASAKI Assoc. Prof. (Resilience Engineering Research Center)	Global logistics network modelling and policy simulation: international, intermodal container cargo simulation, logistics analysis/modelling using the large-scale vessel movement database, and sequential modelling of international trade and logistics. Model applications to many kinds of logistics projects mainly planned for developing countries of the world
16	Kazuya SHIBATA Assoc. Prof.	Investigation of Phenomena and Optimization of Design by Numerical Simulation, Development of New Systems Using Physics-Based Simulation, Numerical Analysis of Fluid Force Acting on Ships and Offshore Structures, Tsunami Simulation in Coastal Areas, Engineering of Disaster Prevention and Mitigation, Development of Evaluation Method for Safety, Particle Methods.
17	Kazuki SHIBANUMA Assoc. Prof.	Structural integrity to achieve sustainable society: Investigation on fracture mechanics of materials and structures, Development of prediction method of aging degradations and maintenance theory, Innovative physical modeling to integrate multiscale

Faculty Members and Outlines of their Research (2/3)

Supervisor's No.	Name of Supervisor	Research field
18	Takashi SHIMADA Assoc. Prof.	Statistical Physics and nonlinear science on biological, ecological, social and economic systems. Namely, ①Theoretical study of universal aspects, such as robustness, of open and evolving systems ②Simulation study of collective phenomena in biological, social, economic systems ③Data analysis of the dynamics of real complex systems.
19	Katsuyuki SUZUKI Prof.	Structural mechanics, computational mechanics and optimal design of multi-disciplinary system, especially ship structure and ocean structures. Sports engineering and human dynamics and optimization of sporting goods and motion (Supervise with Prof. Yonekura).
20	Hideyuki SUZUKI Prof.	Research on Ocean Renewable Energy development system for establishment of sustainable society, especially Floating Offshore Wind Turbine system. Research on floating systems for Ocean Resources, Energy and Space development, and related concept development, numerical model and validation, development of simulation method and risk analysis.
21	Jun TAKAHASHI Prof.	Advanced carbon fiber composite material technology for future transportation society, Innovative simulation technology for new services, Hybrid composite materials for improving social resilience, LCA, Recycling.
22	Yutaro TAKAYA Assoc. Prof.	Waste management and recycling; Utilization method of intractable wastes; Mineral processing and hydrometallurgical process of the deep-sea mineral resources; Carbon fixation with concrete sludge, slag, and silicate
23	Kenji TANAKA Assoc. Prof. (Department of Technology Management for Innovation)	(1) Systems Design for Transportation, Distribution, Energy, and Other Network Services, (2) Data analysis, Simulation, Forecasting, Risk evaluation for Systems Design.
24	Chiharu TOKORO Prof.	Advanced separation technology/process and environmental purification technology/process to achieve sustainable resource circulation, and social system/policy proposal for them.
25	Gjergj DODBIBA Assoc. Prof.	(1) Resources processing for materials recovery and recycling; (2) Synthesis of adsorbent for wastewater treatment; (3) Environmental impact assessment;
26	Fujio TORIUMI Prof.	"Computational Social Science (Social Data Analysis, Agent-based Simulation) and AI for Society. Topics: Social Media, News Media, Web Services, Transportation Data Methods: Complex Networks, Machine Learning, NLP, Agent-based Simulation and Game Theory."
27	Akihiro NAKAO Prof.	DX (Digital Transformation) through next-generation cyber infrastructure (5G / Beyond 5G). Large-capacity, low-latency, multi-connection. Low power consumption and improved safety and reliability. Autonomy by machine learning / AI-based failure prediction / automatic repair. Expandability to space / ocean. Resolving regional issues and creating new value.
28	Kentaro NAKAMURA Assoc. Prof.	(1) Efficient methods for exploring deep-sea mineral resources, (2) Analytical methods for simple and precise determination of rare metals, (3) Formation processes and geological background of metal resources, (4) Evolution of Earth's surface environment and life.
29	Kimihiro HASHIBA Assoc. Prof.	Innovation in resource engineering: sophisticated mining system (advancement of mining machinery, rapid excavation, deep sea mining), risk reduction in resource development, long-term usage of underground structures (rock property, long-term behavior), and geomechanical modeling/simulation.
30	Katsunori FUKUI Prof.	Systems Innovation Engineering of Resources Exploration and Development for Safe and Secure Society (Deep Sea Mining, Preservation of the Environment), Geospace Engineering, Rock Mechanics and Engineering (mechanical modeling/simulation), Mining Machinery.
31	Hideki FUJII Assoc. Prof.	R&D of social system simulation using multi-agent systems or cellular automata, etc., and virtual social experiments (especially microscopic car-traffic or crowd simulation). Simulation-based decision support for social systems in the real world.
32	Kazuo FURUTA Prof. (Resilience Engineering Research Center)	Cognitive Systems Engineering, simulation of socio-technical systems based on human modeling. Resilience Engineering, institutional design and society design for realizing resilient society, technology development for assessing and enhancing resilience of critical infrastructure.
33	Hideaki MIYAMOTO Prof.	(1) Space resources based on planetary geology; (2) Planetary exploration (incld. Hayabusa-2 asteroid mission and MMX Mars satellite sample-return mission) and planetary data analysis; (3) Instrument development; (4) EPO activities at TeNQ space museum as a part of consensus building.
34	Shinsuke MURAKAMI Assoc. Prof. (Department of Technology Management for Innovation)	Mineral Economics & Industrial Ecology (MFA/MSA): Sustainable Resource Use, Evaluation of Social Systems including legislative schemes for recycling of e-wastes and others containing precious/specialty metals, Environmental Impact Assessment of mining, Minerals Market Analysis (simulation / econometrics approaches)

Faculty Members and Outlines of their Research (3/3)

Supervisor's No.	Name of Supervisor	Research field
35	Kazutaka YASUKAWA Lecturer (Frontier Research Center for Energy and Resources)	(1) Characterization of seafloor mineral resources based on chemical analyses, (2) Elucidating genesis of seafloor mineral resources by multivariate statistical techniques, (3) Clarification of Earth system's responses to climate changes based on statistical and modeling approaches. Targeting resources and environmental issues by understanding the Earth system.
36	Tomonori YAMADA Assoc. Prof.	Computational Mechanics Simulation for Safe Society, High Performance Computing on Cutting Edge Supercomputers (FUGAKU etc.), Large-scale Simulation and Machine Learning, Multiphysics Simulation.
37	Shinobu YOSHIMURA Prof.	(1) High-performance Multiphysics Computational Mechanics Simulation and Its Application to Innovative Artifacts Design, (2) Resilient Design of Urban Traffic System Using Intelligent Multi-agent Simulator and Finance Theory, (3) R&D of Innovative Clean Energy Systems such as Off-shore Wind Farm and Coal Gasification Power Plant
38	Kazuo YONEKURA Lecturer	Data-driven design for industrial system using machine learning. Industrial application of machine learning considering explanation to users and society. Design optimization of structure, fluid etc. based on mathematical programming.（Supervise with Prof. K. Suzuki)