Tokyo University of Agriculture and Technology Graduate School of Engineering

Doctoral Course (Doctor)

Application Forms and Guide

For October 2022 Enrollment

Tokyo University of Agriculture and Technology

Graduate School of Engineering

Tokyo University of Agriculture and Technology Graduate School of Engineering
Doctoral Course Application Forms and Guide for October 2022 Enrollment

(1)The Graduate School of Engineering consists of a Master's course and a Doctoral Division. The following application guide and forms are intended for the Doctoral Division.
(2) Applicants who wish to enroll Joint Doctoral Program for Sustainability Research refer to another application guide and forms.
(3) International Specialized Program (English course) established from April 2019 enrollment. Please refer to page10, 4. International Specialized Program.

1. Application Quota

Department	October 2022 Enrollment (Examination) August 19, 2022
Biotechnology and Life Science	Several
Applied Chemistry	Several
Mechanical Systems Engineering	Several
Electronic and Information Engineering	Several
Total	Several

2. Admission Requirements

Applicants must meet any of the following items:
(1)Applicants must either have a master's degree or an equivalent degree in a specialized field, or expect to acquire the degree before entering the Doctoral Course.
(2)Applicants must either have acquired a master's degree or an equivalent degree in a specialized field overseas, or expect to acquire the degree before entering the Doctoral Course.
(3)Applicants must have studied in Japan the required subjects for distance learning set by a foreign school and expect to acquire a master's degree or an equivalent degree in a specialized field before entering the Doctoral Course.
(4)Applicants must have finished an academic course set by the Minister of Education, Culture, Sports, Science and Technology at an educational institute in Japan that provides courses offered by a foreign graduate school that functions under the educational system of a foreign country, and must have acquired a master's degree or an equivalent degree in a specialized field.
(5)Applicants must hold or expect to obtain a Master degree or equivalent before entering the Doctoral Course through course completion at the United Nations University (hereinafter referred to as UNU) as prescribe in Article 1 Paragraph 2 of the Act on Special Measures Incidental to Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (Act No.72 of 1976),which was established under the December 11, 1972 resolution of the General Assembly of the United Nations.
(6)Those who have completed an education course at a foreign school (at educational institutions that have been designated as qualifying for admission), (4) or those who have attended the United Nations University and passed an examination that is equivalent to the Examination of Doctoral Thesis Study Basic Ability, or those who are expected to pass the examination and are recognized as having academic ability that is considered equal to or greater than that of an applicant who holds a master's degree shall be deemed qualified.
(Examination of Doctoral Thesis Study Basic Ability)
i) Examination to evaluate the applicant's advanced professional knowledge and ability in the major subject and basic knowledge in fields that are related to the major subject, which the candidate has learned or intends to develop in the first course.
ii) Examination to evaluate the applicant's ability to autonomously conduct research related to the doctoral thesis and to that which will be learned in the first course.

(7)Applicants are specified by the Minister of Education, Culture, Sports, Science and Technology.
An applicant who is specified by the Minister of Education, Culture, Sports, Science and Technology shall be someone who "has graduated from university or has obtained 16 years of education overseas, has conducted over 2 years of research work at a university or research institute, and whose research has led to the acquisition of a postgraduate's degree or an equivalent degree in a specialized field.

(8)Applicants must have been recognized for having academic ability equivalent to a postgraduate's degree or a specialized field through individual admission screening, and must be 24 years of age at the time of entering the Doctoral Course.

*Preliminary screening will be conducted for applicants applying as either (7) or (8) of admission qualification. (See *The Approval of Admission Qualifications (7) & (8)*.)

3. Selection Schedule

	2022 October Enrollment
※ Application deadline of admission qualification approval	June 13 (Mon), 2021 - June 17(Fri), 2022
※Approval examination	June 29 (Wed), 2022
※Announcement of approval result	July 4 (Mon), 2022
Application deadline	July 12(Tue), 2022 -July 15(Fri), 2022
Examination	August 19(Fri), 2022
Announcement of successful applicants	September 9 (Fri), 2022, 1:30 pm
Admission procedure	September 16 (Fri), 2022

※Admission Requirements (7) (8) chisel target

4. Application Deadline

See *3. Selection Schedule*.
Posted applications must be received by the last day of the deadline.

5. Application Procedure

See *6. Selection Procedures* before applying and submit the required documents either in person at the Admissions Office or by post before the deadline.

Contact information for application submission and inquiries:	Admissions Section, Koganei Student Support Office, Tokyo University of Agriculture and Technology 2-24-16 Naka-cho, Koganei-shi, Tokyo 184-8588 E-MAIL: tnyushi@cc.tuat.ac.jp Office hour: 8:30am-12:00pm, 1pm-5:15pm

6. Selection Procedures

The selection of successful applicants will be conducted comprehensively through academic achievement test and screening of documents.

(1) List of documents to be submitted

Documents for application		Important notes
A	Admission Voucher (use provided form)	Before filling in the section *Proposed Research Title*, ensure to follow guidance of your preferred supervisor and have him/her approval seal in the section *Preferred Supervisor*. If you choice a supervisor with the * 1 mark (P.10-29), consult with him/her in advance. A faculty member who is not written in this guideline cannot be a supervisor.
B	Photograph Voucher / Examination Voucher (use provided form)	An ID picture, showing you without any headwear, and taken within 3 months prior to application (4cm x 3cm) must be adhered where designated.
C	Certificate of (expected) completion of course	You must submit a certificate of (expected) postgraduate's degree or master's degree issued by the graduate school you attended (are attending). This applies even if you have graduated or expect to graduate from our Graduate School of Engineering. Applicants with qualification (6) are required to submit documents relating to the examination confirmed that corresponds to the basic skills examination doctoral dissertation. However, submission of this certificate is not required from applicants meeting admission qualification (7) or (8).
D	Certificate of graduate school academic achievements	Issued by the graduate school you attended. This applies even if you are belonging to our Graduate School of Engineering. However, submission of this certificate is not required from applicants meeting admission qualification (7) or (8).
E	Outline of Master's Thesis (use provided form)	An outline of your master thesis within 2,000 Japanese characters (500 English words) should be submitted if you have completed a master course. In addition, provide separated prints or copies of any published articles related to your postgraduate's thesis, if available. However, this is not required if you are still enrolled in your master course or meeting admission qualification (7) or (8).
F	Research Proposal (use provided form)	The proposal for the Doctoral research should be within 500 English words and ensure you obtain the confirmation of your preferred supervisor.
G	Statement of Purpose (use provided form)	Clearly state your master thesis title, or the general outline of the research you are currently conducting (wish to conduct), as well as why you wish to apply for the course. (Not applicable for graduates, research and current students of our university, and applicants meeting requirement (7) or (8).
H	Return envelope	Applicable only if you submit the application by post. Use Japanese Envelope Chou #3 and adhere 374 yen worth of stamps. Also ensure to provide your name, return address and postal code so we can send you your examination voucher and other documents.
I	Original Copy of Certificate of Residence	Non-Japanese applicants must submit a Certificate of Residence (detailing nationality, residential status, permitted period of stay and its expiration date). In addition, government-sponsored foreign student of the MEXT (Ministry of Education, Culture, Sports, Science and Technology) must also submit a certificate of guarantee of acceptance as Japanese government scholarship student which is issued by the university enrolled.
J	Entrance examination fee (paid using provided payment slip designated by our Graduate School)	30,000 yen. Obtain the designated payment slip for the entrance examination fee at the counter of the Koganei Student Support Office, make your payment at the post office or Japan Post Bank, receive the *Certificate of Transfer Payment Receipt* with the stamp of the branch and date, and attach it on the designated place of *Payment Confirmation Slip of Entrance Examination Fee*. In addition, ensure to keep the *Transfer Payment Invoice and Receipt Slip* safe, as it acts as the receipt of your payment. *As payment of the entrance examination fee will be confirmed with the stamp of branch and date of payment shown on the *Certificate of Transfer Payment Receipt*, make your payment at a post office or Japan Post Bank only. (Payments are not accepted via ATM transaction.) If you are applying from outside of Japan, you are advised to consult with your preferred supervisor first. However, the entrance examination fee payment is not required if you will have completed the master's course of our university and proceed on to the doctoral course, or are supposed to get extension of Japanese government scholarship grant.
K	Name & Address voucher (use provided form)	Fill in all necessary information. Should any information, such as your address, change after submitting your application, make sure to contact the Admissions Section, Koganei Student Support Office immediately.

(2) Academic Achievement Test

You will be tested upon your knowledge of the specialized field related to the outline of the postgraduate's thesis and research proposal you submitted, as well as your language skills.

7. Date and Place of Examination

(1) Date: See *3. Selection Schedule*
(2) Place: Tokyo University of Agriculture and Technology, Koganei Campus
Further details concerning the place of examination will be given to you later.

8. Announcement of Successful Applicants

Date: See *3. Selection Schedule*
The list of successful applicants will be shown on the TUAT website
The *Notice of Acceptance* will be mailed to successful candidates on the same day.

9. Admission Procedure

(1)Date: See *3. Selection Schedule*
Further details will be given to you later.
(2) Required fees upon admission and others
1) Admission fee — 282,000 yen
Not applicable to those who have completed the Master's Course at Graduate School of our university and who are proceeding on to the Doctoral Division, and government-sponsored foreign student.
2) Tuition fee — 535,800 yen [for the first and second semester: 267,900 yen]
Not applicable to government-sponsored foreign student.
Note: Payment of tuition fees is required after entrance.
The fees set above are current and may be subject to change before the date of admission procedure. In addition, should the tuition fee change during enrollment, the new fee will be applicable upon amendment.
3) Other required documents — Entrance Agreement (use provided form)
Working applicants who wish to enter the course while employed must submit the Entrance Agreement provided by such persons as the head of the department. Please note that in case you are unable to submit the agreement your admission may be revoked.

4) Duration of Study for working applicants
While the standard duration of study for Doctoral Course is three years, to promote a favorable academic environment for working adults, a special provision to extend the study period beyond three years may be granted so long as the extended period does not exceed twice the period of the regular duration of study.

10. Important Notes

(1) Ensure to contact and obtain confirmation from your preferred supervisor before you apply.
(2) No signature (approval sign) of the potential supervisor in the application form, it cannot be filed.
(3) Ensure to bring along your Examination Voucher when you come for your academic achievement test.
(4) No part of any documents may be altered once application is submitted.
(5) Should you violate any part of this Application Forms and Guide and instructions given by the university, you may be denied of the examination.
(6) Confirmation concerning the entrance examination should be made at the *Contact information for application submission and inquiries*, as given on page 2.
(7) The examination fee is non-refundable, regardless of any reason.
(8) Applicants will be informed immediately if any changes concerning the examination occur.
(9) Once admitted, upon the submission by the applicants and depending on the systems of the exemption of admission/tuition fee and scholarship, your certificate of achievement which you submitted upon application and the result of your entrance examination may be used for consideration. Please rest assured that your private information, obtained upon your application, will be adequately treated according to our Privacy Policy (available on the university website).
(10)Only for delay of Chuo-line is considerate principally.
(11)In case a disaster occur the before day of examination or the examination day, you check follow address.
http://t-board.office.tuat.ac.jp/T/menu.php
(12) Applicants who need special care due to disability (Prescribed in Article 22-3 of School Education Act) consult with an expected research supervisor and Admissions Section, Koganei Student Support Office as soon as possible before you apply for.
(13) In accordance with the "Foreign Exchange and Foreign Trade Act", Tokyo University of Agriculture and Technology (TUAT) has established "Tokyo University of Agriculture and Technology Regulations for Security Export Control" and has been conducting strict screening of prospective students to be admitted into

TUAT. In case a prospective student or the contents of his/her studies/research is subject to regulation as defined by the above-mentioned Act or Regulations, TUAT must apply to the Ministry of Economy, Trade and Industry (METI) of Japan for its permission to allow his/her enrollment in TUAT, and s/he may not be able to begin his/her studies or research immediately at TUAT for the time being. Furthermore, in case METI denies a TUAT's application in order to maintain international peace and security, the prospective student may not be able to pursue his/her studies or research at TUAT as a result.

The Approval of Admission Qualifications (7) & (8)

Admission qualification approval will be conducted as follows to decide whether you are qualified for application for the Doctoral Course:

1. Submission of Application Documents

Submission date: See *3. Selection Schedule*

Submission time: 8:30 am – 12 pm, 1 pm – 5:15 pm

Submission place: Admissions Section, Koganei Student Support Office, Tokyo University of Agriculture and Technology (1F, Administration Building (CUBE), Koganei Campus)

2. Documents for Submission

(1) Admission Qualification Approval Application Form (use provided form)

(2) Certificate of graduation from the last academic institution attended (issued by the school)

(3) Certificate of achievements from the last academic institution attended (issued by the school).

(4) A list of research achievements (use provided form) and separated prints of any articles published, etc.

(5) Certificate of employment (enrollment) [free format (not applicable to applicants who have no employment history out of them who meet admission qualifications (7) or (8)]

(6) Statement of Purpose (use provided form)

3. Approval Examination

See *3. Selection Schedule*. Details will be given upon application procedures.

4. Approval Result

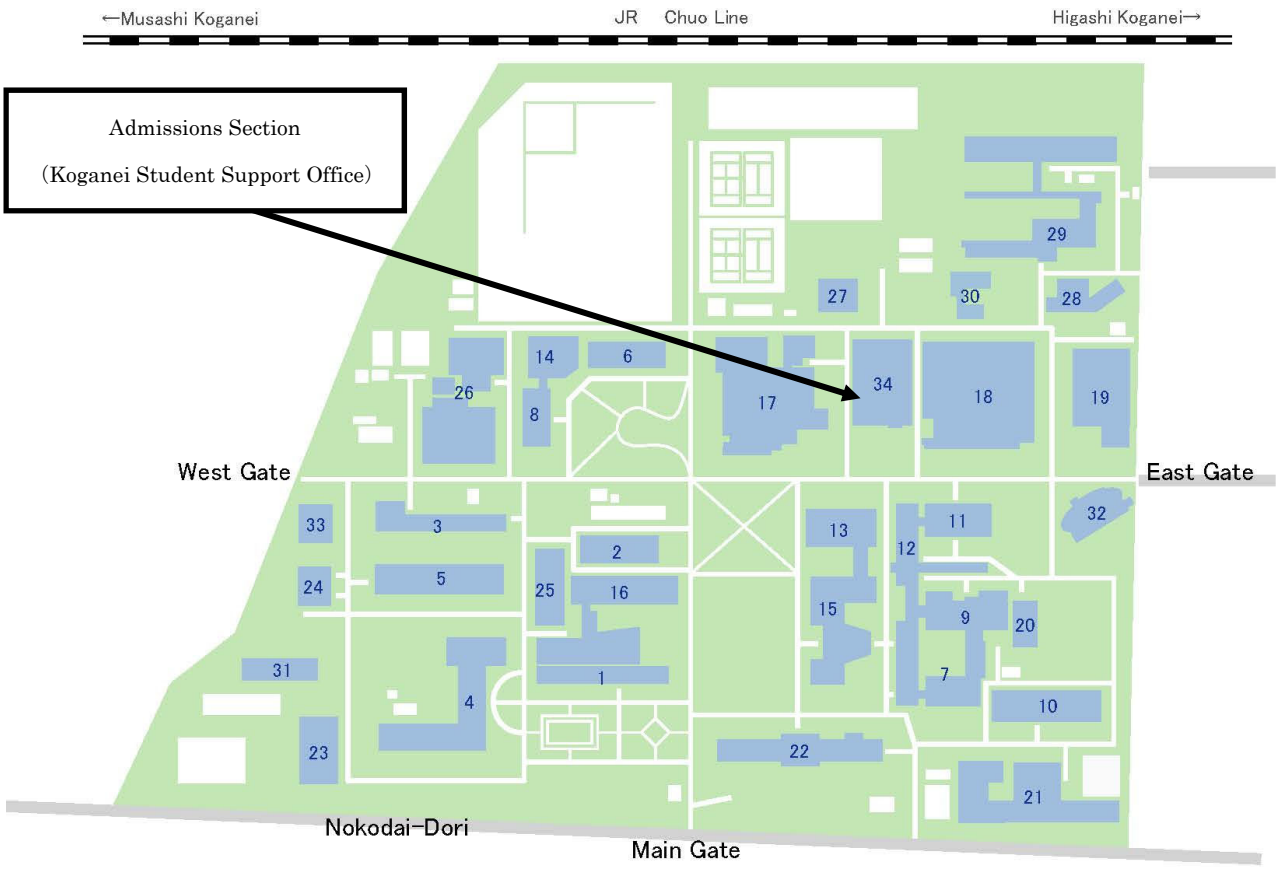
See *3. Selection Schedule* about the date of announcement of approval result. You will be informed by post.

5. Application Procedures

Applicants who have been approved to go ahead with the application should proceed to apply as required for general application. (Refer to p.2- p.4)

Admissions Section
Koganei Student Support Office
Tokyo University of Agriculture and Technology
TEL: +81-42-388-7014
E-mail: tnyushi@cc.tuat.ac.jp

Koganei Campus



1	Building 1: Department of Applied Chemistry, Department of Organic and Polymer Materials Chemistry and Department of Chemical Engineering, Department of Applied Chemistry, Department of Applied Physics and Chemical Engineering
2	Building 2: Department of Mechanical Systems Engineering
3	Building 3: Department of Electrical and Electronic Engineering, Department of Electrical Engineering and Computer Science
4	Building 4: Department of Organic and Polymer Materials Chemistry, Department of Chemical Engineering, and Department of Applied Physics, Department of Biomedical Engineering, Department of Applied Chemistry, Department of Applied Physics and Chemical Engineering
5	Building 5: Department of Electrical and Electronic Engineering, Department of Biomedical Engineering, Department of Electrical Engineering and Computer Science, Instrumentation Analysis Center and Department of Industrial Technology and Innovation
6	Building 6: Department of Mechanical Systems Engineering
7	Building 7: Department of Computer and Information Science, Department of Electrical Engineering and Computer Science
8	Building 8: Information Media Center
9	Building 9: Department of Mechanical Systems Engineering
10	Building 10: Department of Biotechnology and Life Science, and Department of Computer and Information Sciences, Department of Electrical Engineering and Computer Science
11	Building11: Department of Biotechnology and Life Science
12	Building 12: Department of Biotechnology and Life Science, Department of Organic and Polymer Materials Chemistry, Department of Mechanical Systems Engineering, and Department of Computer and Information Sciences, Department of Applied Chemistry, Department of Electrical Engineering and Computer Science
13	Building 13: Organization for the Advancement of Education and Global Learning
14	Building 14: Department of Mechanical Systems Engineering, Department of Biotechnology and Life Science, and Department of Industrial Technology and Innovation
15	Lecture Hall Building for the Faculty of Engineering
16	New Building 1: Department of Applied Chemistry and Department of Electrical and Electronic Engineering, Department of Applied Chemistry, Department of Biomedical Engineering, Department of Electrical Engineering and Computer Science
17	Koganei Library
18	Graduate School of Bio-Applications and Systems Engineering (BASE)
19	Faculty of Engineering Multipurpose Hall, Co-op Store and Cafeteria
20	CAD/CAM Laboratory
21	University Research Administration Center - URAC
22	Nature and Science Museum
23	Research Center for Science and Technology
24	Center for Environment and Safety
25	Center for Design and Manufacturing
26	Gymnasium
27	Faculty of Engineering RI Laboratory Building
28	Koganei International House
29	Male Dormitory “Keyaki”
30	Female Dormitory “Sakura”
31	Staff Housing No. 2
32	The 140th Year Commemorative Building (Ellipse)
33	Research Center for Next Generation Capacitor
34	Administration Building(CUBE): Administration Office and Health Service Center

Guide to the Doctoral Course
Graduate School of Engineering of Tokyo University of Agriculture and Technology

1. Purpose of learning

The Graduate School of Engineering accepts a range of students from home and abroad who have an interest in the natural environment and scientific technology, constantly seek enlightenment, have broad knowledge and perspective, possess the ability to get things done supported by a high degree of self-reliance and strong ethical character, and seek to become engineers and researchers capable of playing a role in international society. Recent development of scientific technology is notable: Information technology is advanced and sophisticated while interdisciplinary and boundary areas related to various specialized fields also see significant progress. The Graduate School of Engineering uniquely aims to provide a variety of academic education that meets the needs of the times, ranging from basic science and engineering to advanced application technology, and to cultivate creative researchers and engineers with broad knowledge and high-level research ability.

2. Admission policy

Based on the purposes of its education, research and human resources development, the Graduate School of Engineering seeks the following students who:

1. Have a broad perspective and basic academic skills for studying their major fields and are equipped with high morality.
2. Have inquisitive and creative minds exploring the truth of nature, have an interest in scientific technology in the fields of science and engineering, think independently through research activities, and work hard to contribute to the solution of research challenges and the development of society in cooperation with other people.
3. Have the ability to set their research themes independently by considering challenges faced by humankind from many perspectives and are highly motivated to try to address those challenges.
4. Have high communication skills in Japanese or foreign languages.

Department of Biotechnology and Life Science

We aim to develop students' international mindset, communication skills, and domestic and global presentation skills and to nurture human resources with the ability to find new needs and discover seeds who can meet the needs of modern society as experts of advanced biotechnology and life science and can work in the center of society as researchers, experts or professionals. So we seek the following students who:

1. Have an interest in research in the biotechnology and life science fields and are highly motivated to contribute to international society through activities in those fields.
2. Have sufficient basic knowledge and problem discovery and solving skills in the biotechnology and life science fields and are willing to venture into new research areas.

Department of Applied Chemistry (Division of Material Application Chemical)

We aim to foster human resources who have advanced professional research and teaching skills for playing a leading role as chemists, resolve problems related to resources, energy, materials, and the global environment, and contribute to the development of basic and applied research and the formation of sustainable society. So we seek the following students who:

1. Create new value from the perspective of atom- and molecule-based chemistry and have the desire and creativity to contribute to international society.
2. Have sufficient basic knowledge and problem discovery and solving skills in the chemistry and related technological fields and are willing and ready to venture into new research areas.

Department of Applied Chemistry (Division of Organic and Polymer Materials Chemistry)

We aim to develop human resources who can play a leading role in the development of highly specialized science and technology related to broad organic materials chemistry, including organic and polymer materials and even inorganic materials and metal complexes, and to help realize the

safe living environment throughout the world. So we seek the following students who:

1. Have an interest in chemical/physical properties of organic and polymer materials and their use and application and are motivated to contribute to society as experts in this field, including peripheral and interdisciplinary areas.
2. Have basic academic skills for chemistry or physics and work hard in research to advance their material scientific insights and problem discovery and solving skills to the level required for professional instructors.

Department of Applied Chemistry (Division of Chemical Engineering)

To contribute to shaping sustainable society, we aim to develop chemical engineers who solve chemical and technological problems related to energy, the global environment, drugs, food, and materials, have advanced professional teaching skills for playing a leading role, and utilize those results for social and international purposes. So we seek the following students. For the doctoral course, those motivated to further advance the ability gained in the master's course are preferred.

1. Have an interest in chemical and technological research related to energy, the global environment, drugs, food, and materials and are willing to contribute to international society through activities in those fields.
2. Have sufficient basic knowledge and problem discovery and solving skills in the chemical and technological fields and are willing to venture into new research areas.

Department of Mechanical Systems Engineering

We aim to nurture sophisticated engineers and researchers who design and create unique and best advanced mechanical systems to globally realize sustainable, environment-friendly, science technology-based society, based on basic analytical skills of physics and mathematics and broad, deep expertise in mechanical engineering, and who use deep understanding and insight of global society and culture and rich communication skills for international society. So we seek the following students who:

1. Have academic application skills for doing state-of-the-art research on mechanical engineering and advanced mechanical systems and have a strong intention to contribute to humankind and society through international activities in their specialized fields.
2. Have problem discovery and solving skills based on sophisticated analytical skills, expertise and insights in the fields of physics, mathematics and machinery engineering and are highly motivated to venture into challenges in new research areas or interdisciplinary areas.

Department of Electronic and Information Engineering (Division of Applied Physics)

We aim to develop human resources who can find solutions to unknown challenges in the advanced physics, physical engineering, and interdisciplinary fields by providing leading knowledge in those physical fields and cultivating problem discovery skills, practical research skills, technological development skills, international mindset, information transmission skills, and flexibility to social needs—abilities required for independent researchers. So we seek the following students who:

1. Have an interest in physical research and are motivated to contribute to international society through activities in the physics field.
2. Have sufficient basic knowledge and problem discovery and solving skills in the physics field and are willing to venture into new research areas.

Department of Electronic and Information Engineering (Division of Applied Electronics Engineering)

We aim to equip students with advanced technologies in electrical and electronic engineering and related expertise and to develop human resources with practical research and development skills based on social needs who contribute to the development of electrical and electronic engineering technologies through research activities in their specialized fields and partnerships with the business community. So we seek the following students who:

1. Have an interest in research in the electrical and electronic engineering field and are motivated to contribute to international society through activities in that field.
2. Have sufficient basic knowledge and problem discovery and solving skills in the electrical and electronic engineering field and are willing to venture into new research areas.

Department of Electronic and Information Engineering (Division of Computer Science)

We aim to nurture human resources who can find solutions to unknown challenges in the information engineering and interdisciplinary fields by providing leading knowledge on information engineering and cultivating problem discovery skills, practical research skills, technological development skills, international mindset, information transmission skills, and flexibility to social needs—abilities required for independent researchers. So we seek the following students who:

1. Have an interest in information engineering research and are motivated to contribute to international society through activities in that field.
2. Have sufficient basic knowledge and problem discovery and solving skills in the information engineering field and are willing to venture into new research areas.

3. Major Education and Research Features

1. In order to respond to the scholastic research fields within the academic arena, research work is conducted under a strong guidance system according to the overall academic specialization based on the general academic system. Meanwhile, supervision of Master's or Doctoral theses is conducted under a multiple-supervision system, in order to respond to interdisciplinary research work.
2. In order to eliminate any hindrance that may be created by specialized academic research that will become high level but extremely narrowed, students will be asked to conduct research of sources for a research theme different to their own Master's or Doctoral theses. This is to ensure students acquire a broad range of knowledge and attain a flexible ability to think.
3. Classes are conducted with focus on the field related to the actual research work undertaken by the teaching staff.
4. The Graduate School of Engineering proactively accepts not only working people who already have acquired a master's degree, but also people who have worked for more than 2 years after graduating from an undergraduate degree.

4. International Specialized Program

International Specialized Program (English course) established from April 2019 enrollment. All lectures will be conducted in English. Professors listed in this guide exept Collaborative Study Fields of Graduate School of Engineering will be affiliated with the International Specialized Program.

Application Quota of International Specialized Program (English course) is included in 1.Application Quota. Admission requirement, selection schedule, application procedure, result of successful applicants, admission procedure and Notes are same to general selection.

5. Main Research Subjects, Department and Academic Advisors

Refer to section A on p.3 for staffs marked ※1

Department : Biotechnology and Life Science		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Biotechnology1		
Cell engineering	Mikako SAITO mikako(at)cc.tuat.ac.jp	Disease model cells of diabetes. Regenerative cell engineering. ES cells. Single-cell gene engineering. Femtoinjection. Food safety control and regulatory science.
	Tetsushi MORI moritets(at)go.tuat.ac.jp	Exploitation and elucidation of the characteristics, role and molecular traits of novel/uncultivable environmental microorganisms using molecular biology based approaches.

Department : Biotechnology and Life Science		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Biomolecular and structural informatics	Yutaka KURODA ykuroda(at)cc.tuat.ac.jp	We carry out biophysical and bioinformatics studies of protein structure, function, and aggregation at a molecular level using recombinant DNA technologies, NMR, and computational simulation for understanding and controlling the immunogenicity and cytotoxicity of misfolded and aggregated therapeutic proteins.
	Yuuji TSUGAWA htsugawa(at)go.tuat.ac.jp	Our laboratory studies the complex metabolic system of living organisms through the development of mass spectrometry omics techniques that illuminate the diversity of metabolites from plant, human, and the associated microbiome.
Structure and cellular function of biomolecules	Yasumoto NAKAZAWA yasumoto(at)cc.tuat.ac.jp	i) Structural analysis of silk fibroins. ii) Development of the medical implantation devices such as artificial cardiac valves and cardiovascular patches based on the silk fibroin.
Molecular biology and pathophysiology	Masaki INADA inada(at)cc.tuat.ac.jp (Collaborative faculty)	Molecular pathological investigation using gene targeted mice and disease models on mice.
	Yoshihiro OHTA ohta(at)cc.tuat.ac.jp	Development of novel techniques for organelle imaging and their application to mitochondrial study. Cell death, Ca2+ signaling and generation of reactive oxygen species are mainly focused.
	Michiko HIRATA※1 hirata (at)cc.tuat.ac.jp	Molecular pathology is investigating that based on gene editing techniques in molecular biochemistry. Focusing fields are development of drug screening models and diagnostic-imaging methods on life related diseases and skeletal disease including osteoporosis, periodontal disease and its related cancers.
Nanobiotechnology	Kazunori IKEBUKURO ikebu(at)cc.tuat.ac.jp	Nucleic acid engineering of aptamers for the application to diagnosis and novel bottom-up nanotechnology.
	Ryuji KAWANO rjkawano(at)cc.tuat.ac.jp	The goal of my research is to establish a system that uses biological nanopores for single-molecule detection. Channel membrane proteins have nanochannels around 1 nm in size. These biological nanopores are capable of detecting and electrically recognize even single molecules with a high signal-to-noise ratio. However, the channel size is limited by the inherent protein structure. I plan to develop artificial nanochannels such as synthetic nanopores or polypeptides combined with biomaterials (proteins and lipid bilayers) on the basis of MEMS technology for novel nanopore sensing.
Biobusiness	Wakako TSUGAWA tsugawa(at)cc.tuat.ac.jp	Development of novel biodevices for the in vitro diagnostics and environmental monitoring systems based on proteins or enzymes.

Department : Biotechnology and Life Science		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Molecular Biochemistry	Ryutaro ASANO ryutaroa(at)cc.tuat.ac.jp	Artificial protein design based mainly on antibody molecules and their detailed functional analyses for development of next-generation biologicals and biosensors.
Biotechnology2		
Marine Biotechnology	Tomoko YOSHINO y-tomoko(at)cc.tuat.ac.jp	Development of novel bio-nanomaterials through genetic engineering by microorganisms for biosensing and biomedical applications.
Biomolecular engineering	Atsushi ARAKAKI arakakia(at)cc.tuat.ac.jp	Molecular analysis of biomineralization mechanism. Biomimetic synthesis of organic/inorganic hybrid nanomaterials using biological molecules.
	Tsuyoshi TANAKA tsuoyo(at)cc.tuat.ac.jp (Collaborative faculty)	Production of biofuels, chemicals and pharmaceuticals on the basis of biological functions of various microorganisms. Development of Bio-sensing system based on lab-on-a-chip technologies.
Bioelectronics	Nobuhumi NAKAMURA nobu1(at)cc.tuat.ac.jp	Bioelectrochemistry and Raman spectroscopy of metalloproteins and construction of biofuel cells. Development of ionic liquids as ion conductors, solvents for biomass extraction and energy conversion.
	Takahiro ICHIKAWA t-ichi (at)cc.tuat.ac.jp	Lipid molecules form bilayer structures that play an important role as a field for various functional biomolecules. In our laboratory, we aim for the construction of novel fields by controlling self-organization behavior of amphiphilic molecules.
Synthetic organic chemistry Bioorganic chemistry/chemical biology	Kazuo NAGASAWA knaga(at)cc.tuat.ac.jp	Total synthesis of biologically active natural products. Development of organocatalyst.
	Kaori SAKURAI sakuraik(at)cc.tuat.ac.jp	Development of novel chemical tools to study biological functions of glycolipids and natural products.
	Masayuki TERA※1 tera(at)go.tuat.ac.jp	Design and synthesis of functional molecules controlling nucleic acids, proteins, and cellular surfaces.
Biosociety engineering Biomolecules and proteomics	Masafumi YOHDA yohda(at)cc.tuat.ac.jp *Retires in March 2025	Structure and function of molecular chaperones. Genetic analysis systems for SNP genotyping and bioremediation.
	KyosukeSHINOHARA k_shino (at)cc.tuat.ac.jp	We examine the role of cilia in our body. Cilia are nanomachine motor device that protrude from cell surface and play important role on transport of fluid in airway, brain, and oviduct. Using knockout mouse, electron microscopy, and protein engineering, we address molecular mechanism of motility and mechanical property of cilia: How cilia move or how cilia acquire their stiffness and integrity.
Theoretical linguistics	Yuji HATAKEYAMA※1 hatayu(at)cc.tuat.ac.jp	Syntactic structure, semantic structure, and information structure.

Department : Applied Chemistry		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Division of Advanced Chemical Science and Technology		
Opto-electronic Materials	Yoshinao KUMAGAI 4470kuma(at)cc.tuat.ac.jp	Growth of compound semiconductor crystals from vapor phase based on the thermodynamic analysis and construction of growth system.
	Hisashi MURAKAMI murak(at)cc.tuat.ac.jp	Crystal growth of semiconductor materials by chemical vapor reaction and characterization of optical and structural properties.
Energy Chemistry & Electrochemistry	Katsuhiko NAOI k-naoi(at)cc.tuat.ac.jp *Retires in March 2023	Energy chemistry. Electrochemical energy storage by use of nano-structured materials. Lithium-ion battery, electrochemical supercapacitor. Hybrid nanoenergy device.
	Etsuro IWAMA iwama(at)cc.tuat.ac.jp	Material design and characterization of nanostructured materials for electrochemical energy storage. Modification of the material/electrolyte interfaces in electrodes for high power and energy-efficient applications.
Molecular Transformation	Taichi KANO kano(at)go.tuat.ac.jp	Development of efficient synthetic methods for bioisosteres and their application to synthesis of biologically active compounds. Design of organocatalysts as artificial enzymes and their application to environmentally benign reactions.
Molecular Design	Takashi YAMAZAKI tyamazak(at)cc.tuat.ac.jp *Retires in March 2023	Development of stereoselective construction methods of fluorine-containing compounds. Clarification of effect of fluorine atoms towards a variety of characteristics of compounds.
	Akio SAITO akio-sai(at)cc.tuat.ac.jp	Development of novel and efficient procedures for the synthesis of heterocyclic compounds
Molecular Catalysis	Masafumi HIRANO hrc(at)cc.tuat.ac.jp	Activation of inactive bond in organic molecules by transition-metal complexes and the application toward molecular transformation with high atom efficiency.
	Keiji MORI k_mori(at)cc.tuat.ac.jp	Concise construction of fused-cyclic skeleton by sequential C–H bond functionalization and development of π-π interactions based novel chiral ligand.
Inorganic Solid State Chemistry	Kazuyuki MAEDA k-maeda(at)cc.tuat.ac.jp	Development of novel nanospace materials such as zeolite-related materials and coordination polymers, especially inorganic-organic hybrid nanosheets and related nanospace materials.
Capacitor Technology (Sponsored Laboratories)	Kenji TAMAMITSU※1 tamamitu(at)cc.tuat.ac.jp	Development of energy storage devices and their functional nanomaterials. Electrochemical energy storage by electric double layer capacitors. Lithium-ion capacitors and hybrid supercapacitors.

Department : Applied Chemistry		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Division of Organic and Polymer Materials Chemistry		
Organic and Polymeric Materials for Electronics and Optoelectronics	Takeshi SHIMOMURA simo(at)cc.tuat.ac.jp	*Functional Polymers for Flexible Molecular Electronics *Development of Conducting Polymer Nanofibers *Polymer Energy Devices Using Low-Dimensionality and Flexibility *Development of Soft Devices with Self-Assembling Properties
	Koji NAKANO k_nakano(at)cc.tuat.ac.jp	*Development of organic functional materials based on organic synthetic chemistry *Design and synthesis of new π-conjugated molecules, and their application to organic electronic/optoelectronic materials *Development of highly-active and selective polymerization catalyst
Polymeric Biomaterials	Yoshihiko MURAKAMI muray(at)cc.tuat.ac.jp	*Biomaterials *Surgical Tissue-Adhesive Materials *Gels for Endovascular *Drug-Release Matrix *Polymers Agent *Polymeric Film for Bioanalysis
	Takahiro MURAOKA muraoka(at)go.tuat.ac.jp	*Bio-inspired synthetic organic chemistry and supramolecular chemistry for 1) protein manipulation and stabilization, 2) membrane functionalization, and 3) cellular activity control.
Physical Chemistry of Organic and Polymeric Materials	Toshiyuki WATANABE toshi(at)cc.tuat.ac.jp	*Development of photoresponsive polymers *Development of reversible thermoresponsive recording of fluorescent image *Synthesis of diamond from carbon dioxide *Development of photoresponsive drug delivery systems
	Hiroyuki OZAKI hiroyuki(at)cc.tuat.ac.jp *Retires in March 2024	*Electronic and Geometric Structure Analysis of Extrathin (4–10 Å) Molecular Aggregates on Clean Surfaces *Creation, Characterization, and Manipulation of a Single Sheet (or Chain) of a Polymer
Fundamental Organic Chemistry for Molecular and Polymeric Materials	Akiko OKAMOTO※1 aokamoto(at)cc.tuat.ac.jp	*Design and Analysis of Spatial Organization of Aromatic-Rings-Accumulated Organic Molecular Compounds: Single Molecular Spatial Organization in Crystal, Crystalline Molecular Packing, and Molecular Structure in Solution *Synthetic Study of Aromatic Condensation Polymers having Repeating Units of Non-coplanarly Accumulated Aromatic Rings
Organic and Polymeric Materials with Integrated Molecular Structure	Hiroaki USUI hirousui(at)cc.tuat.ac.jp *Retires in March 2023	*Physical Vapor Deposition of Organic Materials *Polymeric Film Formation by Vapor Deposition Polymerization *Interface Control of Thin Films Pertinent to Polymeric Materials *Electronic Devices Based on Organic Thin Films
	Yoko TATEWAKI※1 ytatewa(at)cc.tuat.ac.jp	*Development of organic functional materials for electronics devices *Synthesis of conducting and magnetic materials *Preparation of self-assembly nanomaterials *Conducting and magnetic properties of organic devices

Department : Applied Chemistry		
Speciality&Major Research Fields	Academic Advisor	Research Subject
	Shinji KANEHASHI※1 kanehasi(at)cc.tuat.ac.jp	Development of novel functional materials for sustainable society such as unutilized biomass-based products, gas separation, purification, and barrier materials for mitigation of climate change (i.e., global warming), clean energy production (e.g., hydrogen, biogas, natural gas), and food waste problem.
Material Systems Mathematics	Hiroshi GODA※1 goda(at)cc.tuat.ac.jp	*Knots, links and 3-dimensional manifolds
	Eri HATAKENAKA※1 hataken(at)cc.tuat.ac.jp	*Invariants of knots and manifolds in low dimensions
Material Technology for Organic and Polymeric Substances	Hiromu SAITO hsaitou(at)cc.tuat.ac.jp	*Polymer Blends *Mechanical and Optical Properties of Polymers *Morphology Design of Polymers by Supercritical Fluids *Crystallization of Polymers
Material Science & Technology aiming Human Health Support (Sponsored Lavoratories)	Yoriko ATOMI yatomi(at)cc.tuat.ac.jp Miho SHIMIZU※1 mshmz(at)cc.tuat.ac.jp	Material health science based on body-mind integrative science. Elucidation of the cell-body level of the essence of exercise essential to human health and its cooperation. Keywords: Slow muscle (Soleus), cytoskeletal protein (tubulin/microtubule), extracellular matrix (type I, III, V, X collagen, decorin), molecular chaperone (small HSPs, αB-crystallin), mitochondria, trunk exercises, natural wound healing materials, eggshell membrane cosmetics, supplements. Students from various backgrounds (simulation, organic chemistry, biophysics, biomechanics, biochemistry, molecular biology, physiology) are welcome.
Division of Chemical Engineering		
Process Systems Engineering	Yoshiyuki YAMASHITA yama_pse(at)cc.tuat.ac.jp *Retires in March 2025	Design and application of smart and dependable process control systems, process monitoring for connected industries, process simulators, and decision support for various process systems.
	Sanghong KIM※1 sanghong(at)go.tuat.ac.jp	Development and applying process data analysis, process modeling, and process control technologies. The purpose is to realize anomaly detection, yield improvement, control performance improvement, etc. for a wide range of processes such as chemistry, semiconductors, and pharmaceuticals.
Chemical Reaction Engineering	Chihiro FUSHIMI cfushimi(at)cc.tuat.ac.jp	Research and Development of reactors for pyrolysis, gasification or hydrothermal liquefaction. Development of thermal/biomass power plants that integrates with other renewable energy. Process development of biochemical production. Development of fluidized bed reactors for thermochemical reactions.

Department : Applied Chemistry		
Speciality&Major Research Fields	Academic Advisor	Research Subject
	Makoto SAKURAI sakuraim(at)cc.tuat.ac.jp	Research on the creation and design of the following new reaction field and reaction process. Development of high functional structured catalyst for application to the micro chemical process. Application of fine bubble process to the environmental field. Development of unsteady operation for high efficiency chemical process. Design of new high efficiency energy conversion process by thermochemical cycles.
Interfacial Chemical Engineering	Hiroshi TAKIYAMA htakiyam(at)cc.tuat.ac.jp	Research and development of industrial crystallization technology for producing crystalline particles such as pharmaceuticals, foods, battery materials and functional materials.
Chemical Energy Engineering	Wuled Lenggoro labwl(at)cc.tuat.ac.jp	At the intersection of chemical processing, particle/aerosol technology, transport phenomena (fluid, mass, and heat/energy), and bio-systems. Develop technologies to contribute to protect food production and water systems, and save critical ecosystems. Bridging the "micro" and "macro" material-transfers within the global environment.
Environmental Bio-Engineering	Akihiko TERADA akte(at)cc.tuat.ac.jp	Development of bioreactor systems and materials for water/wastewater treatment by controlling complex microbial community in natural environments and control/prevention of biofilms for environmental/medical applications.
	Shohei RIYA※1 sriya(at)cc.tuat.ac.jp	Development of recycling system for agricultural waste or sewage sludge. Waste treatment using anaerobic digestion, and residue processing into soil amendment. Study on nutrient or greenhouse gas dynamics in the soil amended with waste-derived material.
Material Separation Engineering	Hideaki TOKUYAMA htoku(at)cc.tuat.ac.jp	Development of functional polymers and gels and process for metal separation, organic compound separation, drug delivery system, etc. Preparation of micro- or nanoparticles and porous materials.
	Hidenori OHASHI※1 fr1057(at)go.tuat.ac.jp	Functional membrane development and systematic device design in energy and life-science fields based on the molecular transport understanding. (from lithium ion battery, protein refolding, to chemical grafting)

Department : Mechanical Systems Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Division of Fundamental Mechanical Engineeering		
Fluid Mechanics	Masaharu KAMEDA kame(at)cc.tuat.ac.jp	Bubbe dynamics, high-speed aerodynamics, and fluid measurements. Current research topics are (1) pressure-sensitive paint for unsteady aerodyanmics, (2) fragmentation of vesicular magma in volcanic eruption, (3) supersonic air-inlets, and (4) mass transport by bubbling.
	Yoshiyuki TAGAWA tagawayo(at)cc.tuat.ac.jp	Main research field of Yoshiyuki Tagawa's lab is in multiphase flow / micro-fluidics. Current research topics are on supersonic microjets impacting on soft matters. Here we investigate the fundamental mechanism of generation of the microjets and their applications for medical devices / industrial processes. Also the dynamics of droplets are investigated.
Materials Engineering for Machinery	Toshio OGASAWARA ogasat(at)cc.tuat.ac.jp	Experimental and analytical studies of advanced composite materials and composite structures for aerospace systems, automobiles, and robots. Development of novel composite materials such as carbon nanotube composites, ceramics/intermetallics composites, high temperature polymer matrix composites, ablator.
	Akinori YAMANAKA a-yamana(at)cc.tuat.ac.jp	Multi-scale simulation of microstructure evolution and elastoplastic deformation behavior in metallic materials (especially in steel) using phase-field method and crystal plasticity finite element analysis based on homogenization method and its experiemtal validitation.
Strength of Materials	Satoshi TAKADA※1 takada(at)go.tuat.ac.jp	Physics of granular materials and its application to powder technology. Analysis of response to external forces based on particle simulations and continuum modeling.
Elasto-Plasticity and Material Forming	Toshihiko KUWABARA kuwabara(at)cc.tuat.ac.jp *Retires in March 2025	Numerical simulation of material forming, constitutive modeling of metals based on multi-axial stress tests, development of experimental methods for evaluating the formability of metals, development of novel material forming technology, intellectualization of forming machines and dies.

Department : Mechanical Systems Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
	Keiichi NAKAMOTO nakamoto(at)cc.tuat.ac.jp	The research work is focused on the area of machine tool and machining technology to realize “Intelligent Shape Creation with True CAM (Computer Aided Manufacturing)”. Our target is to develop effective manufacturing software regarding process planning and tool path generation in multi-axis control machining. In addition, we are working on various researches to machine the mold of optical elements with high efficiency and high precision.
Analysis of Mechanical Components	Yasuhisa ANDO y-ando(at)cc.tuat.ac.jp	Studies on micro/nano tribology and application of new functions to surfaces using micro fabrication technologies. Studies on applications and development of MEMS (microelectromechanical systems), such as 3D-microstages.
Division of Applied Mechanical Engineering		
Vibration Analysis and Control	Takayoshi KAMADA※1 kama(at)cc.tuat.ac.jp	Active vibration control, smart structure, health monitoring, earthquake resistance technology, base isolation and vibration control of building, vehicle control, elevator technology.
	Ikuo MIZUUCHI mizuuchi(at)cc.tuat.ac.jp	Design, implementation, control methods, sensing mechanisms, actuation mechanisms, software architecture, artificial intelligence, and other aspects of intelligent robots: ongoing subjects include musculoskeletal humanoid robots inspired from human body structure, kitchen assistant robots, intelligent robots, and so on.
	Yuta KURASHINA※1 kurashina(at)go.tuat.ac.jp	Our group is devising research on soft robotics using mechanical dynamics and soft matter. This includes research on hydrogel micro/nano devices and ultrasonic non-contact actuations for applications in drug delivery systems (development of drug release mechanisms), regenerative medicine (cellular tissue formation), and drug discovery modalities (design of drug carriers suitable for organs).
Thermal and Fluid Systems	Akira MURATA murata(at)cc.tuat.ac.jp	Heat and fluid flow related to gas turbines, Numerical simulation of turbulent heat transfer, Flow visualization, and Heat transport device utilizing phase change.
	Kaoru IWAMOTO iwamotok(at)cc.tuat.ac.jp	Efficient thermal-fluid control techniques for energy saving and environment impact mitigation will be developed. Efficient turbulence control techniques for drag reduction of airplanes, those for material engineering (efficient production of high-quality materials), those for bioengineering (effect of fluid pulsation) and those for chemical engineering (efficient production of hydrogen).

Department : Mechanical Systems Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
	Takuma HORI※1 hori(at)go.tuat.ac.jp	Research on heat transfer: Heat and mass transfer in energy harvesting or storage devices, Thermal conduction in nanomaterials, Structure optimization, Coarse grained and multiscale simulations, Thermo-fluid dynamics in interfaces.
Simulation Engineering	Hiroshi MOURI h-mouri(at)cc.tuat.ac.jp *Retires in March 2024	Aiming to automatic driving, recognition technology of the surrounding circumstances using on-board sensors, state estimation techniques and the vehicle control technology have been studied, e.g. the localization technique based on the data of laser range finder, camera and satellite. In addition, investigation on vehicle dynamics control and the one on analysis of human drivers' error based on driving recorder data have been achieved.
	Pongsathorn RAKSINCHAROENSAK pong(at)cc.tuat.ac.jp	Research interests include the development of active vehicle control technologies with integrated sensing of human driver, vehicle motion and road surroundings for safety and security of motorized society, e.g. the safety devices for personal mobility, vehicle dynamics and control, and human-centered driver assistance systems.
	Takao MAEDA t-maeda(at)go.tuat.ac.jp	Our research interests are space exploration robotics and mechatronics, especially surface exploration robotics. Locomotion, autonomous algorithm, and integration of them are the main research topics. We also propose a new plan for future explorations. We develop new technologies required for future space exploration missions using simulation and experiment.
Precision Measurement	Wataru NATSU summer(at)cc.tuat.ac.jp *Retires in March 2025	The main research topics are: research and development on environmental-friendly production system for shape generation with ECM, EDM and polishing; phenomena elucidation and application technology for electrochemical machining; research and development on machining simulation technology; shape generation for Hard-to-machine materials with electrochemical and mechanical polishing; and research on micro deep-hole machining by EDM.
Control Systems	Yasutaka TAGAWA tagawa(at)cc.tuat.ac.jp *Retires in March 2025	Research is under way in developing novel devices for modeling and controlling of mechanical systems. Basic research and device development are performed for vibrational testing systems for the next generation, advanced motion simulator, and power assist systems for man-machine cooperative motion. Design method is studied for controlling systems based on transfer functions.

Department : Mechanical Systems Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Manufacturing System Engineering	Hiroyuki SASAHARA sasahara(at)cc.tuat.ac.jp	Rapid manufacturing. Physical simulation to predict the machining process. Development of a new machining/processing method which can give a functional additional value to the generated surface of a workpiece by cutting and frictional stir burnishing. New machining technology for energy saving and clean processing.
Mechanical Information Engineering	Kentaro IWAMI k_iwami (at) cc.tuat.ac.jp	Main research topic of Iwami group is Nano/Microelectromechanical Systems (NEMS/MEMS) based on nanooptics/nanophotonics. It covers basic enigeering of micro/nanofabrication and scientific exploratory of plasmonics, and our interest is focusing on some practical applications such as massively-parallel electron beam lithography, nanomechanical sensing systems, and so on.
Precision Measurement	Itsuo HANASAKI hanasaki(at)cc.tuat.ac.jp	Cross-disciplinary approaches on the phenomena typically at micro/nano spatio-temporal scales with an emphasis on the theoretical aspects mainly based on the concepts of statistical mechanics and dynamical systems.
Algebraic Mechanical Engineering	Katsuyuki NAOI※1 naoik(at)cc.tuat.ac.jp	Representation theory of infinite-dimensional Lie algebras and their q-analog
Geometric Mechanical Engineering	NobutakaNAKAZONO※1 nakazono(at)go.tuat.ac.jp	Study of discrete integrable systems. (Keyword: Painlevé equation, soliton equation, Toda lattice)
Intelligent Systems for Mechanical Engineering Mechanical Information and Communication	Hiroyuki NISHIDA hnishida(at)cc.tuat.ac.jp	Research on magnetohydrodynamics, aerodynamics and flight dynamics of advanced space propulsions and reusable space vehicles. For example, research on control of high-energy plasma flow for advanced propulsion, development of flow control device and application of the flow control device to reusable space vehicle. Numerical simulation and experiment are conducted to address these objectives.
Mechanical Information and Communication	Yuichi ASAI※1 asai(at)go.tuat.ac.jp	My major research fields are cultural anthropology, linguistic anthropology, and environmental anthropology. My research focuses on how human language constructs socio-cultural phenomeon and the natural environment. Since 2007, I have engaged in fieldwork in the Fiji Islands, South Pacific, and examined unique characteristics of Fijian ritual and mythical cosmology, through linguistic analysis of Fijian language.
Human exercise systems	Hideyuki TANAKA tanahide(at)cc.tuat.ac.jp	Basic research on perception and motor control mechanisms underlying human behaviors. Applied research based on the principle and theories of human behavior for prevention against activity-related accidents (e.g., falls and collisions during walking) and musculoskeletal injuries in daily life.

Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Division of Applied Physics		
Quantum Functions	Kenji IKUSHIMA ikushima(at)cc.tuat.ac.jp	Quantum device and advanced sensing. In particular, the creation of innovative quantum devices using semiconductors or atomic layer materials and the development of infrared/ultrasound imaging technologies. We aim for medical and industrial applications.
Atomic Processes	Masatoshi UKAI ukai3(at)cc.tuat.ac.jp *Retires in March 2023	Physics of electronic, atomic, molecular, and photonic collisions and following relaxation processes in the gas and the condensed phases. Development of new experiments for atomic spectroscopy.
	Atsushi HATAKEYAMA hatakeya(at)cc.tuat.ac.jp	Experimental studies in atomic, molecular and optical physics on the basis of laser spectroscopy, laser spin polarization, and laser cooling. The physics of atom-surface interactions and its applications to precision measurement and quantum manipulation.
Semiconductor Quantum Electronics	Kenzou MAEHASHI maehashi(at)cc.tuat.ac.jp	Synthesis of nanocarbon such as carbon nanotubes and graphene, and fabrication of quantum devices and high sensitive biosensors using nanocarbon-based devices.
Quantum Beams	Hiroki MINODA※1 hminoda(at)cc.tuat.ac.jp	Development of transmission electron microscopy and its applications to biological specimens and functional materials in their actual environment.
Quantum Electronics	Godai MIYAJI※1 gmiyaji(at)cc.tuat.ac.jp	Experimental study on nonlinear optical interaction process between light and mater with intense femtosecond laser pulses and its application to material nano-processing technique.
Complex Functions of Materials	Yoshihiro MURAYAMA ymura(at)cc.tuat.ac.jp	Biophysics and Soft matter physics. Experimental study on biological function, especially, mechanical properties and rheology of biopolymers and mechanics of microorganism.
	Daisuke YOSHINO※1 dyoshino(at)go.tuat.ac.jp	Research for mechanobiology of human health and disease. Development of biomedical devices and medical techniques for vascular diseases.
Functional Material Engineering	Yuki AKAGI※1 y-akagi(at)go.tuat.ac.jp	We are developing smart-materials based on chemistry, biology, and material engineering, to meet unmet medical needs. Furthermore, we aim to realize highly efficient/accurate diagnosis and treatment, by combining them with physical energy such as laser or ultrasound.
Superconducting Materials	Akiyasu YAMAMOTO akiyasu (at)cc.tuat.ac.jp	Experimental research on superconductivity, superconducting materials, and superconducting application. Especially development of novel strong magnets using new high temperature superconductors.

Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Organic Electronics	Toshihiko KAJI※1 kaji-t(at)cc.tuat.ac.jp	Organic electronics and optics. Experimental research on organic electronic devices, such as solar cells, and on nanostructure/crystallinity control of organic thin films.
Physical Information and Communication	Yukiko MORI※1 argo(at)cc.tuat.ac.jp *Retires in March 2023	The study of the drama and the films from the viewpoint of visual communication. Included are the researches on the audience, the cultural backgrounds, and the development of visualizing techniques.
Division of Applied Electronics Engineering		
Electronic System Engineering	Ya Zhang※1 zhangya(at)go.tuat.ac.jp	Fundamental and applied research on semiconductor quantum nanostructures and nanoelectromechanical systems. Development of the next-generation electronics, such as single electron transistors, quantum information processing devices, high-sensitivity terahertz sensors, etc.
Power Electronics	Mingcong DENG deng(at)cc.tuat.ac.jp	Nonlinear fault detection and nonlinear fault tolerant control system design using AI techniques, nonlinear control of smart material actuators and micro-hands.
Electronic Device Engineering	Jun-ichi SHIRAKASHI shrakash(at)cc.tuat.ac.jp	Novel nanofabrication techniques, single-electron transistors (SETs), and ferromagnetic nanostructures.
	Wakana KUBO w-kubo(at)cc.tuat.ac.jp	Development of solar cells, optical devices, and functional materials based on light management technology realized by plasmonic metamaetrials.
Integrated Functional Electronics	Tomo UENO tomoueno(at)cc.tuat.ac.jp	Development of Integrated Circuit based on novel device and process technology. Low temperature insulating film fabrication, OLED fabrication, electrical measurement, physical & chemical analysis.
	Hiromasa SHIMIZU h-shmz(at)cc.tuat.ac.jp	Research on Semiconductor / Magnetic Hybrid Materials, and Their Application to Novel Opto-Spintronics Devices.
Optoelectronics and Photonics	Yasuhiro TAKAKI ytakaki(at)cc.tuat.ac.jp	Three-dimensional display, Holography, Three-dimensional camera, and Optical information processing.
	Yosuke TANAKA tyosuke(at)cc.tuat.ac.jp	Multi-function and high-speed optical signal processing, optical sensing system, and related devices and data processing technique.
Radio Communication System Engineering	Kenta UMEBAYASHI ume_k(at)cc.tuat.ac.jp	Wireless communication network, Signal processing and resource control for efficient and reliable wireless communication, Advanced signal processing for multiple antennas based communications, Cognitive radio techniques, Physical layer security, Nano-devise and Terahertz wireless communications.

Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
	Takehito SUZUKI※1 takehito(at)go.tuat.ac.jp	Terahertz antennas, Extreme materials in the terahertz waveband, Terahertz metamaterials, Extreme-sensitivity terahertz polarization measurements, ultrahigh-speed wireless communication in the terahertz waveband, Terahertz application systems.
Intelligent Systems	Kunihiro FUJIYOSHI※1 fujiyosi(at)cc.tuat.ac.jp	Computer-Aided Design and Design-Automation of VLSI layout problem, using combinatorial algorithm and graph theory.
Electromagnetic Wave Engineering	Takuji ARIMA t-arima(at)cc.tuat.ac.jp	Computational electromagnetics, New materials for electromagnetic waves, Bio-electromagnetics.
Medical Information System Engineering	Akinobu SHIMIZU simiz(at)cc.tuat.ac.jp	Multidimensional Signal Processing. Medical Image Processing and Pattern Recognition based on Artificial Intelligence, Optimization Theory, and Mathematical Statistics. Computer-aided Diagnosis in Medical Imaging.
	Ken TAKIYAMA※1 ken-taki (at)cc.tuat.ac.jp	Main themes are 1. elucidation of neural mechanisms that relate to motor control and learning and 2. proposal of efficient training to improve motor skill. Main techniques are neural network model and human behavioral experiments. We plan to utilize electroencephalograms and machine learning techniques.
Image Processing	Toshihisa TANAKA tanakat(at)cc.tuat.ac.jp	Biosignal informatics (brain-machine interfaces, neuroscience, cognitive science, biomedical information processing for medicine, and AI techniques based on signal processing, machine learning, and mathematical engineering). In addition, imaging audio/acoustics, communications, and biological applications.
	Kohei YATABE※1 yatabe(at)go.tuat.ac.jp	Acoustic signal processing and its application to measurement, analysis and synthesis of sound.
Division of Computer Science		
Algorithmics	Keiichi KANEKO k1kaneko(at)cc.tuat.ac.jp	Algorithms for interconnection networks, parallel/distributed processing, dependable computing.
	Ryuhei MIYASHIRO r-miya(at)cc.tuat.ac.jp	Mathematical programming, discrete optimization, algorithm, modeling.

Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Systems Software	Mitaro NAMIKI namiki(at)cc.tuat.ac.jp	Systems software (operating systems, compiler, protocol stack, window system), embedded systems, high performance computer systems, distributed processing, network architecture, low power computer systems, information systems.
	Hiroshi YAMADA※1 hiroshiy(at)cc.tuat.ac.jp	Operating systems, system virtualization, parallel and distributed systems, system software for dependable computing and cloud computing.
Artificial Intelligence	Katsuhide FUJITA※1 katfuji(at)cc.tuat.ac.jp	Artificial intelligence related to autonomous agents, multi-agent systems, data mining, complex networks, knowledge management.
	Shun WATANABE※1 shunwata(at)cc.tuat.ac.jp	Information theory, Communication Engineering Cryptography,Information security.
Computer System Engineering	Yu NAKAYAMA※1 yu-nakayama(at)go.tuat.ac.jp	Mobile, IoT, and spatial information technologies for next generation information networks, applications, and schemes for utilizing them.
	Hiroe IWASAKI hiroe(at)go.tuat.ac.jp	Research and development of video processing architecture to realize AI processing and video encoding processing toward to location free for achieving the SDGs.
System Design	Takafumi SAITO txsaito(at)cc.tuat.ac.jp *Retires in March 2025	Computer graphics, visualization, image/video processing, shape processing.
	Yuichi TANAKA ytnk(at)cc.tuat.ac.jp	Signal processing, machine learning, image processing and computer vision, biomedical information processing, and their applications for engineering and industry.
Biologically-inspired computing	Toshiyuki KONDO t_kondo(at)cc.tuat.ac.jp	Neurocomputing, evolutionary computation, cognitive robotics, cognitive interface design, brain-computer interface.
Image and vision computing	Ikuko SHIMIZU ikuko(at)cc.tuat.ac.jp	Computer vision, shape and appearance modeling, image recognition.
Computer networks	Nariyoshi YAMAI nyamai(at)cc.tuat.ac.jp	Research for administration, deployment, management, operation, and evaluation of large-scale distributed systems including the Internet, such as Internet architecture, network security, and so on.
	Hironori NAKAJO nakajo(at)cc.tuat.ac.jp	Processor micro-architecture, parallel processing, VLSI design, high performance computing, embedded computer.
Statistical classification and retrieval	Seiji HOTTA※1 s-hotta(at)cc.tuat.ac.jp	Classification and clustering, invariances in recognition, information retrieval.

Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Human computer interaction	Kinya FUJITA kfujita(at)cc.tuat.ac.jp	Human-centered smart interface, telework, online communication, virtual reality.
Natural Language Information Science	Kazuko SHINOHARA※1 k-shino(at)cc.tuat.ac.jp *Retires in March 2024	Cognitive linguistics, Conceptual Metaphor Theory, Spatial cognition and language.
	Ryoko UNO※1 ryokouno(at)cc.tuat.ac.jp	Grammatical analysis and constructive approach to explore the cognitive basis of grammar
Mathematical Informatics	Nobuo HARA※1 nhara(at)cc.tuat.ac.jp	Algebraic geometry and commutative algebra in positive characteristic. In particular, study of algebraic varieties and their singularities via the Frobenius morphism
	Mikio MURATA※1 mmurata(at)cc.tuat.ac.jp	Discretization and ultradiscretization of differential equations, Cellular automaton, Integrable systems and Painleve equations.

Collaborative Study Fields of Graduate School of Engineering

The following academic study fields aim to activate collaborative study with external research institutes that are celebrated for their excellent research achievements.
Note: Those who wish to study in any of the collaborative fields should obtain prior guidance from Chair of each department..

Department : Biotechnology and Life Science

Speciality&Major Research Fields	Academic Advisor	Research Subject
Nanotechnology-Based Cell Engineering (Cooperation Program with National Institute of Advanced Industrial Science and Technology (AIST))	Chikashi NAKAMURA chikashi-nakamura(at)aist.go.jp Hyonchol KIM※1 kim-hc(at)aist.go.jp Ayana YAMAGISHI※1 a-yamagishi(at)aist.go.jp	We develop a new biotechnology, "nanotechnology-based cell engineering", by using nano/micro-device and nano-probe technologies to reveal functions of cancer cells, immune cells and iPS cells. The findings are applied for practical applications, in next-era cell therapies and diagnostics, e. g. genome editing therapy and liquid biopsy.

Department : Applied Chemistry

Speciality&Major Research Fields	Academic Advisor	Research Subject
Non-equilibrium Process Engineering (Cooperation Program with Mitsubishi Chemical Holdings Corporation)	Hiroyuki KAKIUCHI※1 Naoki NOGUCHI※1 Hideto HIDAKA※1	Most of industrial processing of chemical products are in continuous operation. On the other hand, non-equilibrium process operation is emerged recently. We study the theory and practical methods for unsteady and non-equilibrium processing systems.

Department : Mechanical Systems Engineering

Speciality&Major Research Fields	Academic Advisor	Research Subject
Transport Systems Engineering (Cooperation Program with Railway Technical Research Institute)	Tadao TAKIGAMI※1 Hajime TAKAMI※1 Kazuyuki HANDA※1	Education and research are carried out, focusing on advanced analysis and design methods to develop higher-speed train systems for future generation: car body design applicable to higher-speed, technologies for lighter car body design and safety improvement. Social needs and problems for future transport systems are analysed and evaluated.

Aero Space Engineering (Cooperation Program with National Institute of Japan Aerospace Exploration Agency)	Takashi YAMANE※1 Takashi AOYAMA※1 Yasushi WATANABE※1 Yoshiyasu HIRANO※1	Aircraft propulsion engineering, high-speed aerodynamics, structure/materials, aerodynamics/aeroacoustics and rotorcraft concerned with the developments of airplane and spacecraft are studied. In the aircraft propulsion engineering, simulation technology of engine system for airplane, heat resistance and cooling technology of high temperature turbine are studied. In the high-speed aerodynamics, flow control at ultrasonic and hypersonic speed on engine intake and hypersonic boundary layer are studied. In the aerodynamics/aeroacoustics and rotorcraft, unsteady CFD on aircraft, non-linear sound propagation/transmission on rockets, and high-speed rotorcraft are studied. In the structure and materials, damage mechanisms of composite structures, and optimization of airframe structures are studied.
Traffic Safety Engineering (Cooperation Program with National Traffic Safety and Environment Laboratory)	Michiaki SEKINE※1	The research and education for the development of advanced welfare society is promoted by applying the fundamental studies on symbiotic science and technology. Especially, the research and the education are studied at cooperated laboratories where the social environment foundations of safety in road traffic and social environment are guaranteed, verified and examined.
Humanoid Engineering (Cooperation Program with National Institute of Advanced Industrial Science and Technology(AIST))	Ko AYUSAWA※1 Natsuki YAMANOBE※1 Ryusuke SAGAWA※1	Obstacle avoidance algorithm of humanoid robot for efficient object manipulation and carrying task, motion control of humanoid robot by considering its dynamic balance, and remote control of robot by BCI (brain-computer interface)

Automobile prevention safe engineering (Cooperation Program with National Traffic Safety and Environment Laboratory, National Agency for Automobile and Land Transport Technology)	Nobuyuki UCHIDA※1 Hisashi IMANAGA※1	Causation analysis of traffic accidents is a fundamental part of active safety research. Particularly, understanding of driver behaviour during pre-crash period is important for developing preventive safety measures or Advanced Driver Assistance Systems (ADAS). Critical events captured by driving data recorder ("DORA-RECO") will be analyzed for the purpose. Instrumented vehicle experiments which reproduce typical pre-crash scenarios will be conducted for developing preventive safety measures.
Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Advanced Electronic Information System Technology (Cooperation Program with Central Research Laboratory of Hitachi, Ltd)	Masahiko ANDO LI Yongun※1	Optoelectronic Devices, Nanophotonics, Bioinformatics.
Information-Communication Engineering (Cooperation Program with National Institute of Information and Communications Technology)	Hiroyuki TSUJI※1 Soichi WATANABE※1 Nobumitsu HIROSE※1	Education and research for fundamental technologies related with wireless communication HF devices, communication systems, communication environment and electromagnetic wave measurement technologies which support the development of the next-generation information-communication application fields and their key technologies.
Biomedical Electronics (Cooperation Program with RIKEN)	Hideo YOKOTA※1 Keiichi KITAJO※1 Shin YOSHIZAWA※1 Masanobu MURAYAMA※1	Electronics in biomedical engineering related to measurement, signal processing, interfacing, imaging, simulation, and mechatronics.
Fundamentals of advanced intelligence (Cooperation Program with RIKEN)	Mihoko OTAKE※1 Qibin ZHAO※1	Education and research for fundamental and applied artificial intelligence related to discrete optimization, search and parallel computing, tenor learning, approximate Bayesian inference, cognitive behavioral assistive technology.

Urban Space Informatics (Cooperation Program with National Institute of Advanced Industrial Science and Technology(AIST))	Koichi KURUMATANI Akio SASHIMA※1	Analysis of Sensory Data, Machine Learning, Mathematical Analysis of Social Simulation, Service Design and Social Implementation. Education and research are carried out for "Urban Space Informatics," the aim of which is to realize utility and safety in urban space and humans living there. The approach is 1) to analyze and understand sensory data of urban space and humans by machine learning with target model, and 2) to explore possible worlds by social simulations with real sensory data.
Intelligent Data Engineering (Cooperation Program with Central Research Laboratory of Hitachi, Ltd)	Toshio MORIYA※1	Research Subject: Artificial intelligence technologies that process and leverage Big-data collected in Internet-of-Things (IoT) environments.

For October 2022 Enrollment

Tokyo University of Agriculture and Technology Graduate School of Engineering
(Doctoral Course)

志 願 票

Admission Voucher

<table>
<tr><td>Preferred Department</td><td></td><td>Preferred Division</td><td></td><td>Examinee's No.</td><td>*
DC —</td></tr>
<tr><td>Preferred Supervisor</td><td colspan="2">(Signature)</td><td>Proposed Research Title</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Applicant's Name</td><td colspan="2" rowspan="2"></td><td rowspan="2">M
/
F</td><td>Place of Work or University Currently Enrolled</td><td></td></tr>
<tr><td rowspan="2">Domicile (or Nationality)</td><td rowspan="2">(Foreign students to provide nationality)</td></tr>
<tr><td>Date of Birth</td><td colspan="2">(day) (month) (year)</td></tr>
<tr><td rowspan="2">Current Address</td><td colspan="5">(Post Code —) (C/O)</td></tr>
<tr><td colspan="5">TEL: ( ) — Home/Pager ( )
E-Mail:</td></tr>
<tr><td rowspan="2">Contact Address</td><td colspan="5">(Post Code —) (C/O)</td></tr>
<tr><td colspan="5">TEL: ( ) — Home/Pager ( )</td></tr>
<tr><td rowspan="4">Resume</td><td></td><td>Month / Year</td><td colspan="3">Remarks</td></tr>
<tr><td>Academic Record
(Please provide details from high school or special college)</td><td></td><td colspan="3"></td></tr>
<tr><td>Work Experience
(If you have any academic record as a researcher, etc. in a university, etc., please state it here.)</td><td></td><td colspan="3"></td></tr>
<tr><td>Remarks
(Awards and penalties, or the period of school leave, etc.)</td><td></td><td colspan="3"></td></tr>
<tr><td colspan="2">Type of Funding
(Foreign Students Only)</td><td colspan="2">Privately Funded
Funded by the Japanese Government
Funded by Foreign Government</td><td>Application Qualification</td><td>*</td></tr>
</table>

Note 1: DO NOT fill in section marked *.

Note 2: USE black or blue pen only.
Note 3: No Preferred Supervisor's Signature, Can't apply.

Tokyo University of Agriculture and Technology
Graduate School of Engineering
(Doctoral Course)

For October 2022 Enrollment

写 真 票
Photograph Voucher

Affix Photo Here. Photo must be of top part of body, facing forward, without headwear, and taken within the last 3 months. (4cm x 3cm)		
Examinee's No.	* DC —	
Preferred Department		
Preferred Division		
Name		
Date of Birth	(dd) (mm) (yy)	M / F

Record of Attendance*	Attended / Absent

Note 1: DO NOT fill in section marked *.

Note 2: USE black or blue pen only.

DO NOT SEPARATE.

Tokyo University of Agriculture and Technology
Graduate School of Engineering
(Doctoral Course)
受 験 票
Examination Voucher

For October 2022 Enrollment

Examinee's No.	* DC —	
Preferred Department		
Preferred Division		
Name		
Date of Birth	(dd) (mm) (yy)	M / F

(Remarks)
1. This voucher must be placed on the desk during the academic achievement test in full view of the test supervisor.
2. Keep this voucher safe, as it will be required for obtaining the Notice of Acceptance, etc on the day of announcement of successful applicants if you successfully pass the test.
3. DO NOT fill in section marked *.

修士論文の概要

Outline of Master's Thesis

<table>
<tr><td rowspan="2">Examinee's No.</td><td rowspan="2">*
DC —</td><td>Preferred Department</td><td></td><td rowspan="2">Name</td><td rowspan="2"></td></tr>
<tr><td>Preferred Division</td><td></td></tr>
<tr><td colspan="2">Master's Thesis Title</td><td colspan="4"></td></tr>
<tr><td colspan="6">Outline of Master's Thesis</td></tr>
</table>

Note: Applicants having completed a master's degree should provide a concise and specific outline of the thesis under 2,000 Japanese characters (500 words in English).
In addition, diagrams, charts, equations may also be added if necessary. Furthermore, if using a word processor, either print directly onto this form or print on an A4 size sheet in the same layout as this form.
DO NOT fill in section marked *.
USE black or blue pen only.

研　究　計　画　書

Research Proposal

Examinee's No.	* DC —	Preferred Department		Name	
		Preferred Division			
(Proposed) Research Topic					
Outline of (Proposed) Research Topic:					

Note: Use the format shown to provide a concise and specific outline, and no more than 2,000 characters. In addition, if using a word processor, either print directly onto this form or print on an A4 size sheet in the same layout as this form. If you are not student, also provide details of how you propose to conduct your research.
DO NOT fill in section marked *.

志　望　理　由　書

Statement of Purpose

Preferred Department		Name		Examinee's No.	* DC —
Preferred Division				Reference No.	*

DO NOT fill in sections marked *. The statement should be about 1,000 characters and may be made with a word processor using the same format.

Attached Form (1)

Examination No.	* DC —
Result of qualification to apply	* Passed / Failed

Name of person in charge of the approval* * (Signature)

資格認定申請書

Tokyo University of Agriculture and Technology Graduate School of Engineering
Application Form for Approval of Qualification to Apply for the Doctoral Course Entrance Examination for October 2022 Enrollment

Preferred Department		Preferred Division		
Name				**Affix Photo Here.** Photo must be of top part of body, facing forward, without headwear, and taken within the last 3 months. (4cm x 3cm)
Date of Birth (Age)	(dd) (mm) (yy) [years of age]		M / F.	
Current Occupation				
Current Address	TEL ( ) -			

Academic Record	
(dd) (mm) (yy)	Details

Work Experience (Provide details that show the content of work involved, such as in research and development work)	
(dd) (mm) (yy)	Details

Academic (Conference) and Social Activities	
(dd) (mm) (yy)	Details

Note: If using a word processor, either print directly onto this form or print on an A4 size sheet in the same layout as this form.
DO NOT fill in section marked *.

研究業績一覧

List of Research Achievements

Name

Preferred Department		Preferred Division		Examinee's No.	* DC —
Title of academic paper, research presentation, report or patent.		Date of publication or presentation.	Name of publisher, journal, or conference.		Remarks (co-author(s) or co-presenter(s))

Note: Mention your achievements chronologically, and attach separated prints or copies for treatises.
If using a word processor, either print directly onto this form or print on an A4 size sheet in the same layout as this form.
DO NOT fill in section marked*.

入学検定料納付確認票

Confirmation Voucher of Entrance Examination Fee Payment

Preferred Department	
Preferred Division	
Examinee's No.	* DC —

(The Preferred Department and Preferred Division must be filled in by the applicant.)

Affix the Certificate of Transfer Payment Receipt [for Submission to the University] here.

(Note)

1. Invalid without dated stamp of the post office or Japan Post Bank.
2. Applicant's name and address must be filled in where designated on the Certificate of Transfer Payment Receipt.
3. Keep the *Payment Billing and Receipt Slip* safe and DO NOT affix it here.
4. The paid entrance examination fee is not refundable under any circumstances.

Name & Address Voucher

- Fill in your preferred department and division, post code, address and name in the designated fields in each of the 3 sections.
- Ensure your name and address are accurately provided. Notify the Admissions Section immediately if any changes take place after the submission of your application.
- DO NOT fill in the section marked *.