

**Tokyo University of Agriculture and Technology
Graduate School of Engineering Doctoral Course**

**International Specialized Program for Engineer Leader Education
through ASEAN and Japan Cooperation**

**Application Guidelines for
International Students with the Japanese Government Scholarship
and Privately Financed International Students
for October 2020 Enrollment**

Tokyo University of Agriculture and Technology Graduate School of Engineering Doctoral Course offers a curriculum “International Specialized Program (English course)” at all departments, and nurtures engineer leaders who have the skills to create innovative added value for industrial products that support a super-smart society, centered on excellent foreign students from ASEAN countries.

I. Fields of Study and Students Recruited

1. Fields of study and prospective supervisors

- (1) Applicants should select the departments and prospective supervisors they wish to choose from among the research fields of the Graduate School of Engineering provided on pages xiv to xxx.
- (2) If there is no letter of recommendation from the prospective supervisor chosen by the applicant, application will not be accepted (this will be confirmed during the application process). Prior to application, applicants should consult with their supervisor about their desired research topic.

2. Students recruited

- (1) Candidates for MEXT scholarship 1
 - (2) Privately financed international students 4
- * (1) and (2) can be applied together

II. Eligibility and Requirements

See pages ii to vii Candidates for MEXT scholarship
See pages viii to x Privately financed international

III. References for All Applicants

See pages xi

IV. Admission Policy and Fields of Study

See pages xii to xxx

II. Eligibility and Requirements

Candidates for MEXT Scholarship

1. Applicants

Graduate-level international applicants who will come to Japan as new students.

*Applicants should have the MEXT grade point of 2.30 (out of 3.00) or above in two recent years, and are expected to maintain this academic standard during the scholarship program. Moreover, applicants should satisfy one of the conditions of “6. Language skill” below.

2. Nationality

Applicants must have the nationality of a country with diplomatic relations with the Japanese government. Applicants who have Japanese nationality at the time of application are ineligible.

However, applicants based in countries other than Japan who have dual nationality including Japanese nationality at the time of application are eligible if they choose a foreign nationality by the date of arrival and plan to surrender their Japanese nationality.

3. Age

Applicants who were born on or after April 2, 1985.

*The exceptions to the above age requirements are limited to cases where MEXT judges that the applicant was unable to apply at the age of qualification due to the system and circumstances of the country of nationality (duty of military service, loss of educational opportunities due to war, etc.). We do not accept any personal circumstances (economic conditions, family circumstances, health conditions, university or work circumstances, etc.). However, if an applicant who has completed the young leaders program and who does not meet the above age requirements, wishes to enter the doctoral program, we accept him/her only within 5 years after completing the program.

4. Academic background

Applicants must be a graduate of a Japanese university or have academic abilities equivalent to or greater than those of a Japanese university graduate. Eligible applicants other than those who have graduated from Japanese universities are defined as follows:

- 1) Applicants must have acquired a master’s degree or an equivalent degree in a specialized field overseas, or expect to acquire the degree by the end of September 2020.
- 2) Applicants who have been recognized as having academic abilities equivalent to or greater than those of a holder of a master’s degree or an equivalent degree by TUAT through individual entrance qualification screening. And applicants who have reached 24 years of age as of the first day of the enrollment month.

5. Fields of study

Your major fields at university or related fields that you can study at our Graduate School of Engineering

6. Language skill

Applicants are required to fulfill at least one among the following English proficiencies .

- 1) A score of qualification or examination test equal to or more than B2 equivalent of Common European Framework of Reference for Languages (CEFR) in English at the time of enrollment in a regular course.
- 2) Applicants who completed the educational course that satisfies entrance qualifications for a Japanese graduate school doctoral course in English as the main language.
- 3) Applicants who are recognized by our Graduate School of Engineering as having the English proficiency specified in 1) above.

7. Health

Applicants should be in good mental and physical health.

8. Arrival in Japan

Applicants must be able to arrive in Japan between October 1 and October 14, 2020.

9. Remarks

- 1) Applicants in one or more of the following categories are “ineligible.” They must decline the scholarship offer if they are found to fit any of the following criteria.
 - (1) Active members of the military or civilians employed by the military at the time of arrival in Japan and during the scholarship period;
 - (2) Applicant who is unable to come to Japan within the period designated by MEXT or our Graduate School of Engineering;
 - (3) Those who were the Japanese government (MEXT) scholarship students in the past (including those who declined after arrival in Japan). However, this does not apply to an applicant, who: (i) have academic or work experience of more than 3 years from the month following the last month of scholarship to the last month of scholarship; or (ii) the last Japanese government (MEXT) scholarship received was either a Japanese-studies student and later returned to a university from which he or she graduated (or expected to graduate) in their home or another country, an international student in Japan under the Japan-Korea Joint Government Scholarship Program for the Students in Science and Engineering Departments and later returned to South Korea, or an international student under the young leaders program. In addition, MEXT Honors Scholarship do not apply to the Japanese government (MEXT) scholarship, so you can apply even if you have received it in the past.
 - (4) Those who have applied for duplicates of other 2020 scholarship programs under the Japanese government (MEXT) scholarship.
 - (5) An applicant who is enrolled in a Japanese university with a status of residence “Ryuugaku (student)” at the time of application, or who is enrolled or scheduled to be enrolled as a privately financed student in a Japanese university since the time of application until the scholarship provision. However, even if the applicant (privately financed student) is enrolled or scheduled to be enrolled in a Japanese university, the following case is excluded: At the time of application, the applicant is surely expected to complete his/her study program prior to commencement of the MEXT Scholarship grant period and return home, and then acquires a new status of residence “Ryuugaku (student)” to come again to Japan.
 - (6) Those who plan to receive scholarships from an organization (including a governmental organization in his or her home country) other than the Japanese government (MEXT) after the start of scholarships.
 - (7) An applicant who failed to graduate and whose conditions and academic qualification are not satisfied by the prescribed date.

- (8) An applicant who has dual nationality at the time of application and cannot prove that he/she has surrendered Japanese nationality by the date of arrival.
 - (9) An applicant who is planning long-term research activities (internships, fieldwork, etc.) outside Japan, or planning to take a long-term leave of absence from the time of application.
 - (10) An applicant who completed doctoral course and does not aim for obtaining a degree.
- 2) Admission shall be cancelled if a candidate who expected to graduate failed his/her graduation before the end of September 2020.
 - 3) Regarding “II. Eligibility and Requirement, 4. Academic background,” in case the candidate has less than 16 years of school education, evaluation is required prior to the admission. Please inform your prospective supervisor at our Graduate School of Engineering by January 8, 2020.
 - 4) We will employ those who, while studying in Japan, contribute to mutual understanding between their countries and Japan by participating broadly in local schools and activities as human resources that help internationalize Japan. We also expect them to strive to promote the relationship between their countries and Japan by maintaining close relationships with their Japanese universities after graduation, cooperating in questionnaire surveys after graduation, and cooperating in projects implemented by Japanese diplomatic missions after returning home.

Application Procedure

Applicants should submit, via their university or institution, the following documents to the prospective supervisor of our Graduate School of Engineering before January 31, 2020.

- 1) Submittal of application
 - All the documents should be sent by international mail, etc. to the prospective supervisor. (The applicant should contact the prospective supervisor and obtain an acceptance from him or her in advance.)
- 2) Documents to be submitted
 - (1) APPLICATION FORM FOR JAPANESE GOVERNMENT (MEXT) SCHOLARSHIP FOR 2020 (use enclosed form)
 - (2) Field of your major and research plan (use enclosed form)
 - (3) Research achievement
 - (4) An abstract of either Bachelor’s or Master’s thesis, or equivalent paper in Japanese or English within 600 words.
 - (5) A letter of recommendation, by the dean or head of the applicant’s affiliated institution. This letter is addressed to the president of Tokyo University of Agriculture and Technology. Please use the envelope issued by your university and an official seal of your university.
 - (6) A certification that shows the applicant’s birth, nationality, citizenship, or residence in the applicant’s home country such as a transcription of domiciliary register or a proof of citizenship.
 - (7) Original academic transcript issued by the last university attended (undergraduate or graduate school.)
 - (8) Original diploma or certificate for (prospected) graduation issued by the last university attended (undergraduate or graduate school), indicating the degree conferred. (Diploma will be returned.)

- (9) Original of the academic certificate of the last university attended showing the GPA or the ranking which the applicant has been awarded within his or her class (e.g. Xth out of Y students.)
- (10) Original certificate for language (e.g., TOEFL, IELTS, etc.)
(If the applicant does not have a certificate to prove your language skills, please contact the prospective supervisor as soon as possible.)
- (11) A certificate of health (use enclosed form and this certificate should be obtained within the past 6 months before the submission.)
- (12) A photocopy of passport (If you have already your passport. The pages where the name and the photograph can be identified)

3) Remarks

- i) All the documents should be typewritten in either English or Japanese and printed two-sided in A4 size with enclosed form. (In the case the document is not English or Japanese, please attach the translation in English or Japanese with it.)
- ii) The submitted documents will not be returned
- iii) All documents should be correctly completed and submitted before the deadline. Documents submitted after the deadline and incomplete applications will not be accepted.
- iv) The documents and forms are subject to change.

4) Screening and candidates of results etc.

- i) Candidates recommended by TUAT will pass through MEXT selection and the results will be notified to TUAT.
- ii) The prospective supervisor of our Graduate School of Engineering will inform the candidates of the results by July 2020.
- iii) Classes and instructions are given mainly in English and this program offers a Doctor of Engineering or a Doctor of Philosophy in 3 years. The enrollment identification is a full time doctoral course student.

5) Allowance

The scholarship duration for MEXT Scholarship recipients is thirty-six (36) months from October 2020.

The amount of the monthly stipend for 2020 is yet to be determined. For reference, the monthly amount for 2019 scholarship was JPY 147,000/month (This amount is subject to change each year depending on the fiscal budget, prices, etc.).

The scholarship will not be paid to a recipient who is on a leave of absence or absent for a long period from his or her university. The scholarship will be cancelled in the following cases:

- i) If any portion of the recipient's application documents is found to be falsely stated.
- ii) If the recipient is in breach of his or her pledge made to the Minister of MEXT.
- iii) If the recipient violates Japanese laws and regulations and is imprisoned for more than a year.
- iv) If the recipient is subjected to a disciplinary action or expulsion by his or her university.
- v) If it is determined that the recipient will not be able to complete his or her course within the standard course term because of his or her poor academic achievement or suspension.
- vi) If the recipient changes his or her resident status of "Ryuugaku (student) ," without obtaining a new resident status of "Ryuugaku (student) ," to any other status.

- vii) If the recipient receives another scholarship (except for a scholarship designated for research expenses).
- viii) After admission, if the recipient advances to higher courses without approval of extension of the scholarship grant period.
- ix) If the recipient leaves the host university or transfers to another graduate school.
- x) If the recipient's annual academic grade point is less than 2.30 or the grading standard set by the university.

6) Traveling costs

- i) Transportation to Japan: Recipients will be provided, according to the itinerary and route designated for them by MEXT, with an economy class air ticket from the international airport closest to their place of residence to Narita International Airport (or an international airport the recipient's host university normally uses).
Recipients will have to shoulder expenses such as domestic transportation from their place of residence to the nearest international airport, passenger service facilities charge (PSFC), airport taxes, special taxes on overseas travel and domestic travel expenses in Japan (basically the recipient's place of residence should be the current address stated in the application form). Moreover, an air ticket will not be provided if the recipient travels to Japan from a country other than that of his or her nationality.
- ii) Transportation from Japan: Upon application, recipients who wish to return to their home country within the last-payment month of the scholarship will be provided with an economy class air ticket for a flight from Narita International Airport (or an international airport the recipient's university normally uses) to the international airport closest to their place of return.
- iii) Travel expenses for transportation from their place of residence in Japan to the nearest international airport, airport tax, airport use fee, special tax required for travel, travel expenses within nationality (including aircraft transit costs), travel insurance fee, carrying expenses related to goods and unaccompanied baggage will be borne by the international students. In addition, if you return home before the end of the scholarship period due to your own reasons or "5) Allowance i-x" above, you will not receive a return trip fee.
- iv) Recipients should bare the cost of travel insurance for their travels to/from Japan.
- v) If you continue to stay in Japan after the scholarship period ends (for example, advancement or employment in Japan), travel expenses for temporarily returning home will not be paid.

7) Educational expenses

Tokyo University of Agriculture and Technology will bear the entrance examination fee, entrance fee, and tuition fee.

8) Expenses necessary at the time of enrollment

- i) School fees including the entrance examination fee, entrance fee, and tuition fee will not be charged.
- ii) The Students Education and Research Accident Insurance insures students against unforeseen accidents and injuries (but not illnesses) in curricular and extracurricular activities. The expense is JPY 2,600 for 3 years.
- iii) The Student Liability Insurance Program provides compensation in the event that the student injures another person or damages another person's property during the regular course, internship, volunteer activities, off-campus research (surveys, tours, training), museum curator training, or extracurricular activities (such as overnight field trips and expeditions).

The cost of this insurance is JPY 5,400 for 3 years. A member fee for the University Co-op of JPY 5,000 is also required but will be reimbursed at the end of the Doctor's program. (*The costs of the insurance fee and the member fee for the University Co-op are subject to change.) All the enrolling students are required to join the Student Liability Insurance Program in addition to the Students Education and Research Accident Insurance.

Privately Financed International Students

1. Applicants

Doctoral course-level international applicants who will come to Japan or are residing in Japan and wish to obtain a doctoral degree from our Graduate School of Engineering

2. Nationality

No nationality requirements.

3. Age

No restriction.

4. Academic background

Applicants must be a graduate of a Japanese university or have academic abilities equivalent to or greater than those of a Japanese university graduate. Eligible applicants other than those who have graduated from Japanese universities are defined as follows:

- 1) Applicants must either have acquired a master's degree or an equivalent degree in a specialized field overseas, or expect to acquire the degree by the end of September 2020.
- 2) 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 1 October 2020.

5. Health

Applicants should be in good mental and physical health.

6. Language skill

Applicants are required to fulfill at least one among the following English proficiencies .

- 1) A score of qualification or examination test equal to or more than B2 equivalent of Common European Framework of Reference for Languages (CEFR) in English at the time of enrollment in a regular course.
- 2) Applicants who completed the curriculum that satisfies entrance qualifications for a Japanese graduate school doctoral course in English as the main language.
- 3) Applicants who are recognized by our Graduate School of Engineering as having the English proficiency specified in 1) above.

7. Arrival in Japan

Applicants must arrive in Japan by October 14, 2020.

8. Other remarks

- 1) Admission shall be cancelled if a candidate who expected to graduate failed his/her graduation before the end of September 2020.
- 2) In case the candidate does not meet the "4. Academic background, 1)" requirement, evaluation is required prior to the admission. Please inform your prospective supervisor at our Graduate School of Engineering by January 8, 2020.

Application Procedure

Applicants should submit, via their university or institution, the following documents before January 31, 2020.

(All the applicants must apply after contacting the prospective supervisor of our Graduate School of Engineering and obtaining approval of acceptance.)

1) Submittal of application

All the documents should be sent by registered mail to the prospective supervisor of our Graduate School of Engineering. (The applicant should contact the prospective supervisor and obtain an acceptance from him or her in advance.)

2) Documents to be submitted

- (1) 2020 academic year application form (use enclosed form)
- (2) Field of study and research plan (use enclosed form)
- (3) An abstract of bachelor's thesis, or equivalent paper in Japanese or English within 600 words.
- (4) Either a graduation certificate or a corresponding certificate issued by the applicant's school indicating that the applicant will be graduating from undergraduate or master's programs, which applicant lately graduated or graduating. A transcript of academic record and a degree certificate of undergraduate or master's programs that is issued by university authorities, which applicant lately graduated or graduating.
- (5) A certification that shows the applicant's birth, nationality, citizenship, or residence in the applicant's home country such as a transcription of domiciliary register or a proof of citizenship.
- (6) A letter of recommendation, by the dean or head of the applicant's affiliated institution. This letter is addressed to the president of Tokyo University of Agriculture and Technology. Please use the envelope issued by your university and an official seal of your university.
- (7) Original certificate for language
(e.g., TOEFL, IELTS, etc.)
(If the applicant does not have a certificate to prove your language skills, please contact the prospective supervisor as soon as possible.)
- (8) A certificate of health (use enclosed form and this certificate should be obtained within the past 6 months before the submission.)
- (9) A photocopy of passport (If you have already your passport. The pages where the name and the photograph can be identified.)
- (10) Entrance examination fee of JPY 30,000
(to be paid by using the prescribed payment form. Applicants outside Japan are advised to refer to their prospective supervisor for details)

3) Remarks

- i) All the documents should be typewritten in either English or Japanese and printed two-sided in A4 size with enclosed form. (In the case the document is not English or Japanese, please attach the translation in English or Japanese with it.)
- ii) The submitted documents will not be returned.
- iii) All documents should be correctly completed and submitted before the deadline. Documents submitted after the deadline and incomplete applications will not be accepted.
- iv) The documents and forms are subject to change.

- v) The prescribed payment form for the entrance examination fee can be requested from Admissions Section of Koganei Student Support Office. Please request it early beforehand to avoid being late. After payment, please submit a receipt (right side of the money transfer bill) with application documents.
- 4) Screening and aim of this special course
- i) The screening will be conducted based on the submitted documents in “IV. Application Procedure.”
 - ii) The notification of acceptance will be sent by your preferred supervisor directly by the end of March 2020.
 - iii) Classes and instructions are given mainly in English and this program offers a Doctor of Engineering or a Doctor of Philosophy in 3 years. The enrollment identification is a full time doctoral course student.
- 5) Expenses necessary at the time of enrollment
- i) Entrance fee of JPY 282,000.
 - ii) Tuition fee for the fall semester (Oct. 2020 to Mar. 2021) is JPY 267,900 (JPY 535,800 per year). Tuition fee and entrance fee will be adjusted at any time without notice.
 - iii) The Students Education and Research Accident Insurance insures students against unforeseen accidents and injuries (but not illnesses) in curricular and extracurricular activities. The expense is JPY 2,600 for 3 years.
 - iv) The Student Liability Insurance Program provides compensation in the event that the student injures another person or damages another person’s property during the regular course, internship, volunteer activities, off-campus research (surveys, tours, training), museum curator training, or extracurricular activities (such as overnight field trips and expeditions) The cost of this insurance is JPY 5,400 for 3 years. A member fee for the University Co-op of JPY 5,000 is also required but will be reimbursed at the end of the Doctor’s program. (*The costs of the insurance fee and the member fee for the University Co-op are subject to change.) All the enrolling students are required to join the Student Liability Insurance Program in addition to the Students Education and Research Accident Insurance.

III. References for All Applicants

- i) Before arrival in Japan, students are advised to obtain information about climate, customs, manners, and universities of Japan. Please understand that you have to use Japanese in out-of-class life.
- ii) Please refer to the TUAT website for research, education and other details.
(<https://www.tuat.ac.jp/en/>)
- iii) Personal information given on application will only be used in accordance with the privacy policy of the University.
- iv) If you have any inquiry about these application guidelines, please contact the address below in writing.

Postal address:

Admissions Section of Koganei Student Support Office
Graduate School of Engineering
Tokyo University of Agriculture and Technology
2-24-16 Naka-cho, Koganei-shi
Tokyo 184-8588 JAPAN
Fax: +81-42-388-7013

IV. Admission Policy and Fields of Study

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 Advanced Chemical Science and Technology)

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 Computer and Information Sciences (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.

Fields of Study (Academic Advisors)

Fill in the section Preferred Supervisor with the name of staff except for ones marked ※1.

Department : Biotechnology and Life Science		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Cell engineering	Associate Professor 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.
	Associate Professor Tetsushi MORI※1 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.
Biomolecular and structural informatics	Professor Yutaka KURODA ykuroda(at)cc.tuat.ac.jp	Biophysical and bioinformatics studies of protein/peptide aggregation, function, and immunogenicity at atomic/molecular level using recombinant DNA technologies, NMR, X-ray crystallography, and computational simulation.

Department : Biotechnology and Life Science		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Structure and cellular function of biomolecules	Associate Professor Yasumoto NAKAZAWA※ 1 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	Associate Professor Masaki INADA inada(at)cc.tuat.ac.jp (Collaborative faculty)	Molecular pathological investigation using gene targeted mice and disease models on mice.
	Associate Professor Yoshihiro OHTA ohta(at)cc.tuat.ac.jp	Development of novel techniques for organelle imaging and their application to mitochondrial study. Cell death, Ca ²⁺ signaling and generation of reactive oxygen species are mainly focused.
	Professor Chisato MIYAURA miyaura(at)cc.tuat.ac.jp (Collaborative faculty) *Retires in March 2021	Investigations of refractory diseases for clinical drug development are employed for lifestyle-related diseases such as Cancer, Osteoporosis, Rheumatoid Arthritis and Periodontitis. Functional analysis of molecular biochemistry using mammalian cell to individuals are promoted research.
	Senior Assistant Professor 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	Professor Kazunori IKEBUKURO ikebu(at)cc.tuat.ac.jp	Nucleic acid engineering of aptamers for the application to diagnosis and novel bottom-up nanotechnology.
	Associate Professor 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	Associate Professor 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.
Molecular Biochemistry	Associate Professor 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.

Department : Biotechnology and Life Science		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Plant biotechnology	Professor Yoshihiro OZEKI ozekey(at)cc.tuat.ac.jp *Retires in March 2022	Molecular biological and biochemical studies on the enzymes involved in plant secondary metabolisms.
	Associate Professor Akiyo YAMADA※1 yamaden(at)cc.tuat.ac.jp	Molecular biological analysis of the genes based on the function of the proteins related to salt-tolerance phenotype of the halophyte.
Marine Biotechnology	Professor 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	Associate Professor Atsushi ARAKAKI arakakia(at)cc.tuat.ac.jp	Molecular analysis of biomineralization mechanism. Biomimetic synthesis of organic/inorganic hybrid nanomaterials using biological molecules.
	Professor 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	Professor 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.
	Associate Professor 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	Professor Kazuo NAGASAWA knaga(at)cc.tuat.ac.jp	Total synthesis of biologically active natural products. Development of organocatalyst.
	Associate Professor Kaori SAKURAI sakuraik(at)cc.tuat.ac.jp	Development of novel chemical tools to study biological functions of glycolipids and natural products.
	Associate Professor 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	Professor Masafumi YOHDA yohda(at)cc.tuat.ac.jp	Structure and function of molecular chaperones. Genetic analysis systems for SNP genotyping and bioremediation.

Department : Biotechnology and Life Science		
Speciality&Major Research Fields	Academic Advisor	Research Subject
	Associate Professor Kyosuke SHINOHARA※1 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	Associate Professor 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
Opto-electronic Materials	Professor 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.
	Associate Professor 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	Professor 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.
	Associate Professor Etsuro IWAMA※1 iwama@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	Professor Hiroki OGURI h_oguri(at)cc.tuat.ac.jp	Synthesis of natural products and functionalized small/medium-sized molecules. Development of synthetic strategies for systematic diversification of skeletal, stereochemical and functional group properties of biologically-relevant molecules. Chemical biology and drug development of the natural product inspired molecules.
Molecular Design	Professor 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.
	Associate Professor Akio SAITO akio-sai(at)cc.tuat.ac.jp	Development of novel and efficient procedures for the synthesis of heterocyclic compounds

Department : Applied Chemistry		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Molecular Catalysis	Professor 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.
	Associate Professor Keiji MORI※1 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	Associate Professor 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.
	Professor Tatsuo NOMA※1 noma(at)cc.tuat.ac.jp (Collaborative faculty)	Synthesis and application of functional ceramic films including ferroelectrics, dielectrics and photo catalysts. Designing of processing method using high electric field at elevated temperatures.
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.
Organic and Polymeric Materials for Electronics and Optoelectronics	Professor 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
	Associate Professor 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
Fundamental Organic Chemistry for Molecular and Polymeric Materials	Professor Noriyuki YONEZAWA yonezawa(at)cc.tuat.ac.jp *Retires in March 2021	Design of Organic Molecules and Transformations on the Basis of Fine Molecular Structure Analysis Enabling Satisfactory Reactivity and Selectivity, as Protocols for Exhaustive Use of Carbon Resources: *Superacid-mediated Activation of Conventional Organic Molecules Performing C–C Bond Formation *Chemistry of Aromatic-Rings Accumulated Molecules with Non-coplanar Configuration *Fundamental Organic Chemistry for Polymer Materials

Department : Applied Chemistry		
Speciality&Major Research Fields	Academic Advisor	Research Subject
	Senior Assistant Professor 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
Polymeric Biomaterials	Professor 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
	Associate Professor Takahiro MURAOKA※1 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	Professor 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
	Associate Professor Hiroyuki OZAKI hiroyuki(at)cc.tuat.ac.jp	*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
Organic and Polymeric Materials with Integrated Molecular Structure	Professor 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
	Senior Assistant Professor 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
Material Systems Mathematics	Professor Hiroshi GODA goda(at)cc.tuat.ac.jp	*Knots, links and 3-dimensional manifolds
	Senior Assistant Professor Eri HATAKENAKA※1 hataken(at)cc.tuat.ac.jp	*Invariants of knots and manifolds in low dimensions

Department : Applied Chemistry		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Material Technology for Organic and Polymeric Substances	Professor 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 Laboratories)	Professor Yoriko ATOMI yatomi(at)cc.tuat.ac.jp Associate Professor 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, α B-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.
Process Systems Engineering	Professor Yoshiyuki YAMASHITA yama_pse(at)cc.tuat.ac.jp	Design and application of smart and dependable process control systems, process monitoring for connected industries, process simulators, and decision support for various process systems.
Chemical Reaction Engineering	Associate Professor 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	Professor 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	Professor Wuled Lenggoro labwl(at)cc.tuat.ac.jp	At the intersection of chemical processing and bio-systems, to address the issues on "green processing" (energy-use or resources), agriculture and health-care fields. Including aerosol technology and powder synthesis for "engineered" or "unwanted" materials systems.

Department : Applied Chemistry		
Speciality&Major Research Fields	Academic Advisor	Research Subject
	Associate Professor Chihiro FUSHIMI※1 cfushimi(at)cc.tuat.ac.jp	Development of a novel high-efficiency gasifier. Development of thermal/biomass power plants that can mitigate fluctuation of power demand and supply. Process development of biochemical production. Efficient utilization of bioenergy by integrating other renewable energy.
Environmental Bio-Engineering	Professor 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.
	Associate Professor Shohei Riya※1 sriya@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	Associate Professor 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.
	Associate Professor 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
Fluid Mechanics	Professor Masaharu KAMEDA kame(at)cc.tuat.ac.jp	Bubble dynamics, high-speed aerodynamics, and fluid measurements. Current research topics are (1) pressure-sensitive paint for unsteady aerodynamics, (2) fragmentation of vesicular magma in volcanic eruption, (3) supersonic air-inlets, and (4) mass transport by bubbling.
	Associate Professor 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.

Department : Mechanical Systems Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Materials Engineering for Machinery	Professor 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.
	Associate Professor 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 experiental validation.
Strength of Materials	Associate Professor 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	Professor Toshihiko KUWABARA kuwabara(at)cc.tuat.ac.jp	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.
	Associate Professor 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	Professor 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.
Vibration Analysis and Control	Professor Takayoshi KAMADA 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.

Department : Mechanical Systems Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
	Associate Professor 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.
Thermal and Fluid Systems	Professor 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.
	Professor 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).
Thermal and Fluid Systems	Associate Professor 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	Professor Hiroshi MOURI h-mouri(at)cc.tuat.ac.jp	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.
	Associate Professor 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.

Department : Mechanical Systems Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Precision Measurement	Professor Wataru NATSU summer(at)cc.tuat.ac.jp	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.
	Associate Professor Masayoshi WADA mwada(at)cc.tuat.ac.jp	Wheeled mobile robots, multiple mobile robot coordination, motion control of electric vehicles, human-machine interface, mechatronics systems for welfare applications and other research topics covering wide area of engineering technology includes machine design, electric circuit design, computer programming, and control theories.
Control Systems	Professor Yasutaka TAGAWA tagawa(at)cc.tuat.ac.jp	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.
	Associate Professor Gentiane VENTURE venture(at)cc.tuat.ac.jp	The main research topics are at the edge of robotics and biomechanics. We are focusing on finding motion features that characterize the humans; and that can be understood by the robots. Research includes development of formalisms and methodologies to understand the human (actions, emotions) and the human motions from their dynamics, as well as to measure the humanoid dynamics. The range of applications includes human-robot interaction, medical diagnostics support, rehabilitation monitoring, sport science, entertainment.
Manufacturing System Engineering	Professor 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.

Department : Mechanical Systems Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Mechanical Information Engineering Precision Measurement	Associate Professor Kentarō 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 engineering 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.
	Associate Professor 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	Associate Professor Katsuyuki NAOI※1 naoik(at)cc.tuat.ac.jp	Representation theory of infinite-dimensional Lie algebras and their q-analog
Integrable systems	Associate Professor Nobutaka NAKAZONO※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	Associate Professor 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	Associate Professor 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 phenomenon 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.

Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Quantum Functions	Professor Kenji IKUSHIMA ikushima(at)cc.tuat.ac.jp	Quantum devices and their applications. Through fundamental studies of quantum transport in semiconductors, ultra-sensitive terahertz detection is targeted.
Atomic Processes	Professor 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.
	Professor 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	Professor 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	Professor Hiroki MINODA 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	Associate Professor 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	Associate Professor Yoshihiro MURAYAMA ymura(at)cc.tuat.ac.jp	Soft matter physics, Biophysics, and Non-equilibrium physics. Experimental studies on dynamical properties of biomolecules and living matter.
	Associate Professor 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.
Superconducting Materials	Associate Professor Akiyasu YAMAMOTO※1 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.
Organic Electronics	Associate Professor 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.

Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Physical Information and Communication	Professor 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.
Electronic System Engineering	Professor Toshiyuki SAMESHIMA tsamesim(at)cc.tuat.ac.jp *Retires in March 2021	Researches on passivation of defects of crystalline semiconductors and their surfaces, and on new processing and devices of semiconductor solar cells and transistors.
	Associate Professor 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	Professor Mingcong DENG deng(at)cc.tuat.ac.jp	Fault detection and fault tolerant control system design of thermoelectric conversion elements, robust nonlinear compensation of smart material actuators and micro-hands.
Electronic Device Engineering	Professor Jun-ichi SHIRAKASHI shrakash(at)cc.tuat.ac.jp	Novel nanofabrication techniques, single-electron transistors (SETs), and ferromagnetic nanostructures.
	Associate Professor Wakana KUBO※1 w-kubo(at)cc.tuat.ac.jp	Development of solar cells, optical devices, and functional materials based on light management technology realized by plasmonic metamaterials.
Integrated Functional Electronics	Professor 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.
	Associate Professor 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	Professor Yasuhiro TAKAKI ytakaki(at)cc.tuat.ac.jp	Three-dimensional display, Holography, Three-dimensional camera, and Optical information processing.
	Associate Professor 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.

Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Environmental Energy Engineering	Professor Ken NAGASAKA bahman(at)cc.tuat.ac.jp *Retires in March 2022	Power System Engineering, New Energies including Wind, Solar, Micro Hydro and Geothermal Generation, Planning and Operation of Micro Grids, Smart Grid, Load Forecasting, Power Deregulation, Energy Conservation, Application of Intelligent Engineering such as Neural Network to Power Systems, etc.
Radio Communication System Engineering	Associate Professor Kenta UMEBAYASHI※1 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.
	Associate Professor Takehito SUZUKI※1 takehito@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	Associate Professor Kunihiro FUJIYOSHI 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	Professor Toru UNO uno(at)cc.tuat.ac.jp *Retires in March 2022	Antennas and propagation, Computational electromagnetics, Bio-electromagnetics, Geophysical sensing, Electromagnetic environment, Electromagnetic metamaterials.
	Associate Professor Takuji ARIMA t-arima(at)cc.tuat.ac.jp	Computational electromagnetics, New materials for electromagnetic waves, Bio-electromagnetics.
Medical Information System Engineering	Professor Akinobu SHIMIZU simiz(at)cc.tuat.ac.jp	Medical Imaging, Computer-aided Diagnosis, Pattern Recognition, Multidimensional Signal Processing.
	Associate Professor 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.

Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
Image Processing	Associate Professor Toshihisa TANAKA tanakat(at)cc.tuat.ac.jp	Mathematical signal processing and its applications to: brain signal processing for brain-machine interfacing, image processing and pattern recognition, adaptive signal processing, and radar signal processing.
Algorithmics	Professor Keiichi KANEKO k1kaneko(at)cc.tuat.ac.jp	Algorithms for interconnection networks, parallel/distributed processing, dependable computing.
Mathematical optimization	Associate Professor Ryuhei MIYASHIRO※1 r-miya(at)cc.tuat.ac.jp	Mathematical programming, discrete optimization, algorithm, modeling.
Systems Software	Professor 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.
	Associate Professor 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.
Computer System Engineering	Associate Professor 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.
System Design	Professor Takafumi SAITO txsaito(at)cc.tuat.ac.jp	Computer graphics, visualization, image/video processing, shape processing.
	Associate Professor Katsuhide FUJITA※1 katfuji(at)cc.tuat.ac.jp	Artificial intelligence related to autonomous agents, multi-agent systems, data mining, complex networks, knowledge management.
Biologically-inspired computing	Professor Toshiyuki KONDO t_kondo(at)cc.tuat.ac.jp	Neurocomputing, evolutionary computation, cognitive robotics, cognitive interface design, brain-computer interface.
Image and vision computing	Associate Professor Ikuko SHIMIZU ikuko(at)cc.tuat.ac.jp	Computer vision, shape and appearance modeling, image recognition.
Computer networks	Professor 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.

Department : Electronic and Information Engineering		
Speciality&Major Research Fields	Academic Advisor	Research Subject
	Associate Professor Hironori NAKAJO nakajo(at)cc.tuat.ac.jp	Processor micro-architecture, parallel processing, VLSI design, high performance computing, embedded computer.
Statistical classification and retrieval	Associate Professor Seiji HOTTA※1 s-hotta(at)cc.tuat.ac.jp	Classification and clustering, invariances in recognition, information retrieval.
Human computer interaction	Professor Kinya FUJITA kfujita(at)cc.tuat.ac.jp	Human-centered smart interface, telework, online communication, virtual reality.
Information theory	Associate Professor Shun WATANABE※1 shunwata(at)cc.tuat.ac.jp	Information theory, Communication Engineering Cryptography, Information security.
Natural Language Information Science	Professor Kazuko SHINOHARA※1 k-shino(at)cc.tuat.ac.jp	Cognitive linguistics, Conceptual Metaphor Theory, Spatial cognition and language.
	Associate Professor Ryoko UNO※1 ryokouno(at)cc.tuat.ac.jp	Grammatical analysis and constructive approach to explore the cognitive basis of grammar
Mathematical Informatics	Professor Nobuo HARA 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
	Associate Professor Mikio MURATA※1 mmurata(at)cc.tuat.ac.jp	Discretization and ultradiscretization of differential equations, Cellular automaton, Integrable systems and Painleve equations.