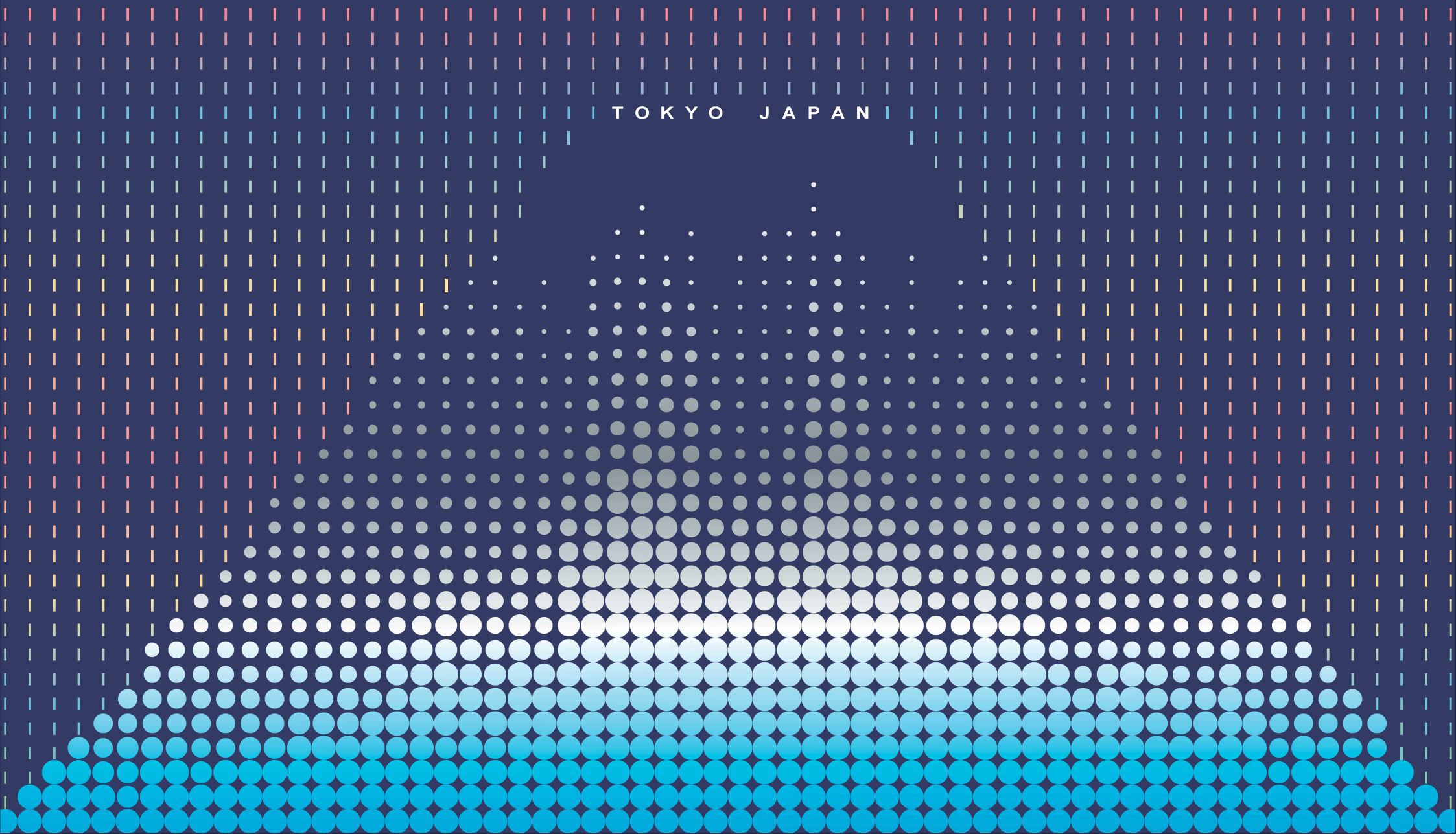




# The University of Electro-Communications

— 2020 —

T O K Y O J A P A N



# About UEC

## The Cutting-edge of Science and Technology

### From the President

**Tano Shunichi**

This University has its roots in the Technical Institute for Wireless-Communications, founded in 1918 by the Wireless Association to train wireless communication engineers. Later, in 1949 the University of Electro-Communications was established according to the Japan's 'National School Establishment Law'. It is notable that the University is the only national university with undergraduate schools that does not include a place in its name. This is because the University was established based on the spirit of creating a university that is open to the whole of Japan.

Based on the purpose for establishing the University and its name, it is often thought that it only specializes in the fields of electricity and communication. However, the fields of specialization were expanded in line with Japan's rapid economic growth and evolution towards an advanced information-oriented society.

Now, in the 21st century, with the core of information, electricity, and communications, the University offers education programs and conducts research over a wide range of fields from basic science and engineering to applications, including physical engineering, material science, life science, optical science, electronics, robotics, mechanical engineering, and media.

Now, the Japanese Government is strongly promoting the establishment of a "super smart society" where cyberspace and the real world are highly integrated, in the form of a series of initiatives known as 'Society 5.0'. The University will work to realize a society with "Sustained independent evolution + Maximized diverse happiness" and functions that generate innovation". The basic and core technology fields required for the construction of this future society overlap with the majors of the University, thereby underscoring its strengths as well as the responsibility for achieving these goals.

The University has launched the "DC & I. Strategy" as a comprehensive strategy to respond to the mandate to realize 'Society 5.0'. Here, "D = Diversity (multiple diversity in fields, human resources, objectives)" as an indispensable foundation for value creation. "C = Communication (mutual understanding and interaction between various elements) mutual inspiration, and consequently alliances and collaborations)" to respect the spontaneous, practical, and diverse activities of all members, and then be locked into the existing framework. The aim is to promote "I=innovation" in value creation and human resource development by promoting wide-ranging collaboration and co-creation.

Based on the "DC & I. Strategy," the University will endeavor to be recognized globally for creating new value that nurtures innovative leaders for the construction of a sustainable society.

### Message to International Students

UEC specializes in science and technology related to the "Comprehensive Communication Sciences", particularly in the areas of information sciences, computer sciences, telecommunications, electronics, mechatronics, robotics, optical technologies, physics, chemistry, biology, and offers 14 undergraduate programs, 14 master's programs, and doctoral programs in 5 departments.

UEC is open to ambitious international students as well as a multitude of research collaborations.

We are more than happy to welcome you to join us.



## The Mission of UEC

[URL http://www.uec.ac.jp/eng/about/](http://www.uec.ac.jp/eng/about/)

Aiming for the creation and achievement of knowledge and skill to contribute to the sustainable development of humankind

**Education and research at the cutting-edge of science and technology for the benefit of all humankind**

**Cultivating talented researchers and technologists who will be successful internationally to take the initiative in various fields**

**Creative engagement and cooperation with society in the pioneering of a new era of science and technology**

### "Unique and Exciting Campus."

UEC aims to become a "Unique and Exciting Campus" as our ideal university by implementation of UEC Vision. This means that we aspire to make UEC an exciting campus where **unique** students and researchers gather from around the world and are trained to be global leaders in the creation of **exciting** new knowledge.

# Location of UEC Campus

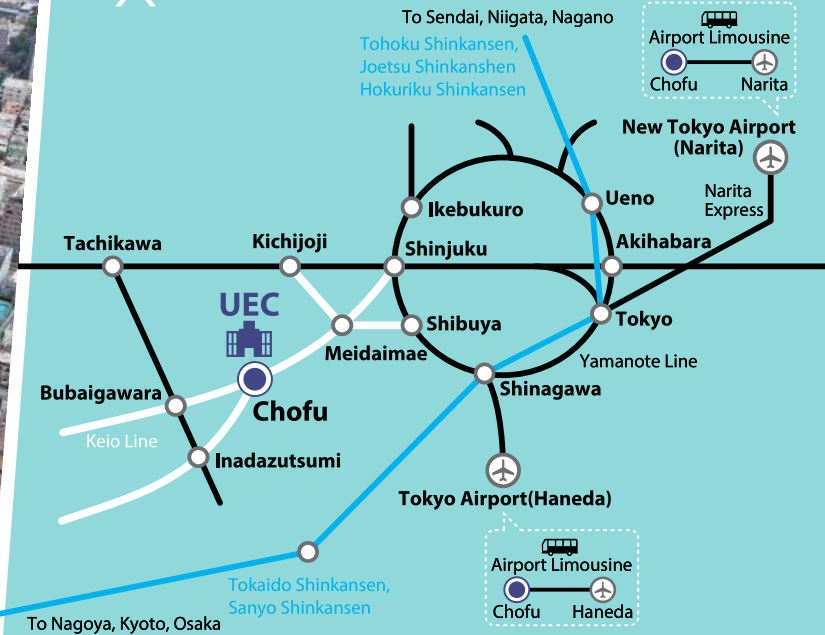
## A tree-lined campus located in the west of Tokyo

The University of Electro-Communications (UEC) is located in Chofu-City in the west of Tokyo. The approximately 164,600m<sup>2</sup> campus comprises undergraduate and graduate educational facilities along with a library and various research centers.

As part of efforts to mark the centenary of UEC's founding in 2018, the university completed UEC Port, a new joint research facility with student accommodation facilities in 2017.



### Access Map

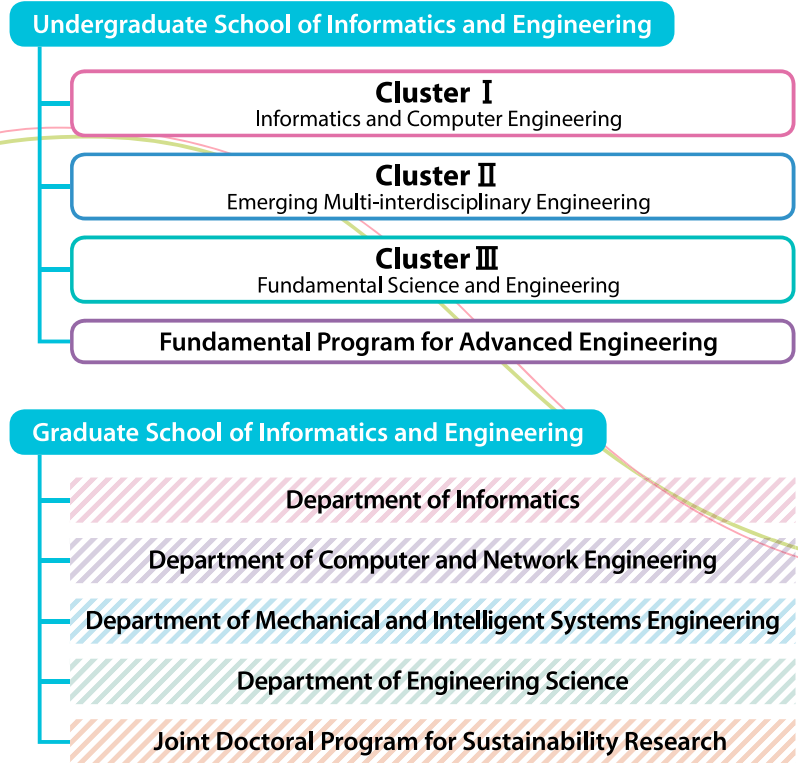


### Time Required

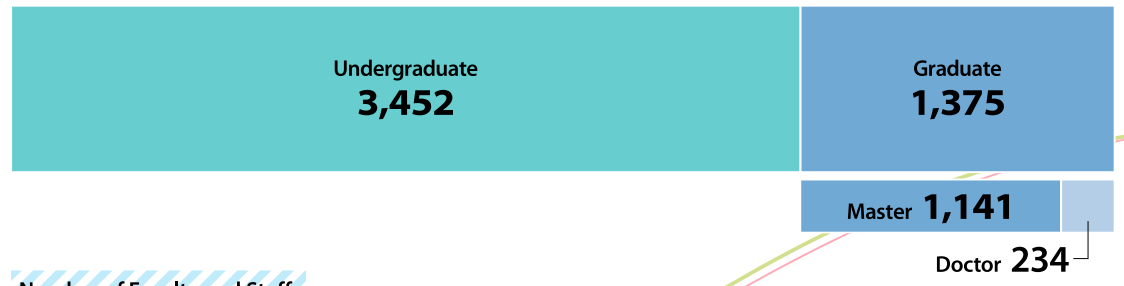
15 minutes by train (Keio line) from Shinjuku  
Approx. 1-1.5hrs by Airport Limousine from Haneda Airport  
Approx. 2hrs from Narita Airport

# Basic Information

## Organization, facts and figures about UEC



### Number of Students



### Number of Faculty and Staff



### Home Countries / Regions of International Students

CHINA	188	FRANCE	2	MALAYSIA	1
KOREA	26	GERMANY	2	MONGOLIA	1
TAIWAN	9	ALGERIA	1	NEPAL	1
VIETNAM	9	ANGOLA	1	PAKISTAN	1
INDONESIA	8	CAMEROON	1	PHILIPPINES	1
MEXICO	7	CROATIA	1	POLAND	1
LAOS	5	GHANA	1	TURKEY	1
BRAZIL	3	HUNGARY	1	SOUTH SUDAN	1
THAILAND	3	INDIA	1		
CAMBODIA	2	KENYA	1		

**!! Research University**

UEC was authorized as one of 19 "Research Universities" by the Ministry of education, Culture, Sports, Science and Technology (MEXT), Japan in 2013.

- System for Strengthening Research Activities
- Promotion of Internationalization
- Formation of International Photonics Research Center
- Reform of Undergraduate/Graduate Schools
- Strengthening Research Advertisement
- Reform of Personnel System and Talented Person Appointment

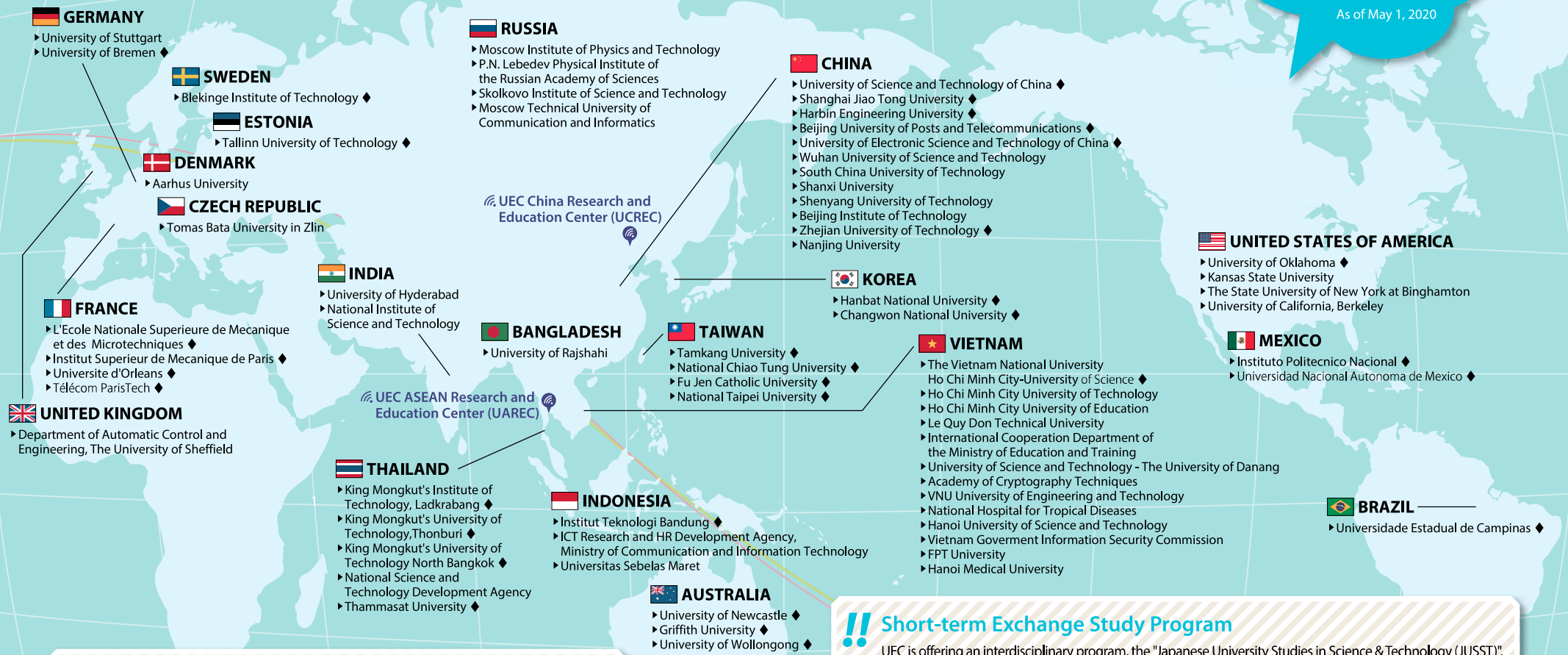
**For Comprehensive Communication Sciences !!**

As of May 1, 2020

# University Hubs and Exchange Expanding Across the World

-  : Satellite Office
-  : International Partners
-  : Student Exchange Agreements

As of May 1, 2020



**!! Research and Education Center (overseas)**

UEC established two overseas research and education center to promote in-depth research, foster highly skilled personnel, and implement dynamic activities and partnerships between industries and academic institutions

 **UEC ASEAN Research and Education Center (UAREC)**  
Location : KMUTT KX for Innovation Center, Bangkok, Thailand / Established : February 2014

 **UEC China Research and Education Center (UCREC)**  
Location : Beijing Advanced Innovation Center for Intelligent Robots and Systems, Beijing Institute of Technology, China / Established : October 2017

**!! Short-term Exchange Study Program**

UEC is offering an interdisciplinary program, the "Japanese University Studies in Science & Technology (JUSST)", to students from our exchange partner institutions. This program is specially designed for senior undergraduate (3rd or 4th year students) and graduate students in the field of Informatics, Science and Engineering.

The JUSST program also provides the opportunities to the students to acquire knowledge and develop practical skills, international understanding and cooperation through Science, Technology and Culture. Students admitted to this program can enjoy our exciting cross-cultural study and experience in Japan.

There are numbers of advanced laboratories with the latest technologies on the campus. These are attractive environment for students to study sciences and engineering. Furthermore, JUSST program enables students to learn science and engineering at UEC without interrupting their ongoing major studies at their home institution.

[URL http://www.fedu.uec.ac.jp/en/future\\_students/jusst/](http://www.fedu.uec.ac.jp/en/future_students/jusst/)

# 100 years of Revolutionary Change Spanning Centuries of Turbulence —and further toward the future ahead



## History of UEC

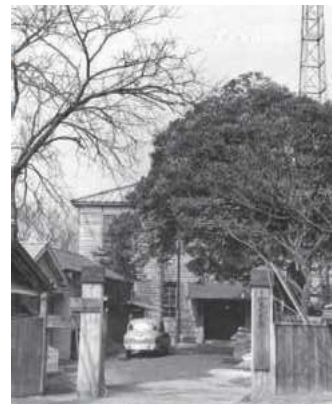
- December 8, 1918** The Technical Institute for Wireless-Communications founded by the Wireless Association of Japan.  
Temporary campus located at Iikura, Azabu-ku, Tokyo.
- December 15, 1920** New campus opened in Shimomeguro, Meguro-mura, Ebara-gun, Tokyo.
- April 1, 1942** The Technical Institute for Wireless-Communications becomes part of the Ministry of Communications.
- April 1, 1945** The Technical Institute for Wireless-Communications renamed as the Central Technical Institute for Wireless-Communications.
- August 1, 1948** The Central Technical Institute for Wireless-Communications becomes part of the Ministry of Education.
- May 31, 1949** The University of Electro-Communications is established.
- December 15, 1957** All the campus moves to Chofu City, Tokyo.
- April 1, 2004** The University of Electro-Communications incorporated as a National Corporation University under the National University Corporation Act.
- December 8, 2018** 100th anniversary.

## History

The origins of UEC go back to 1918, when the Technical Institute for Wireless-Communications was founded by Wireless Association to train wireless communications engineers.

In 1949, under the new system of education established by the National School Establishment Act, the institute was transformed into the University of Electro-Communications. UEC expanded its areas of specialization in the midst of Japan's rapid economic growth and the development of an advanced information society that occurred at the same time as that growth.

In 2004, the University of Electro-Communications was incorporated under the National University Corporation Law.



## UEC Vision

## UEC Strategy centennial and beyond

[URL http://www.uec.ac.jp/eng/about/uecvision.html](http://www.uec.ac.jp/eng/about/uecvision.html)

The paradigm shift of knowledge is brought about by borderless mutual inspiration of deeply engrained wisdom and a firm foundation of knowledge, under constantly changing environments with pluralistic diversity, that is, the dynamism of comprehensive communication sciences. While respecting the activities of individual, we will continue to be the base for creating knowledge dynamism of education and research related to comprehensive communication sciences and continue to return this knowledge to the global society. In addition, we, as a university internationally recognized for excellence in education and research, will train innovation leaders who will contribute to the construction of a sustainable development society by collaboration that is not bound by existing frameworks.

### Education and Research

As an institution with world-class educational and research capabilities, we provide an environment where global and unique students and researchers can gather to pursue their activities in a borderless manner. Within the dynamism of comprehensive communication sciences, we will train human resources capable of leading the advancement of science and technology, with interdisciplinary and pluralistic thinking power, while keeping their own expertise, and also will create 'fusion-border' based academic disciplines that are not bound by established concepts.

### Circulation of Knowledge

As an internationally recognized university, we will actively promote practical education and research activities harmonized with society by collaborating with organizations, regions, and industries. We will play a reliable role for the realization of sustainable society for the benefit of all mankind.

## UEC International Strategy

### ① Developing Global Opportunities

1. Building strategic partnerships focusing on key countries/regions and institutions.
2. Enhancing collaborative relationships with overseas universities, industries, and the government through the UEC ASEAN Research and Education Center and UEC China Research and Education Center.

### ② Strengthen activities of global education and research

1. Enhancing international exchange programs such as the "Global Alliance Laboratory", "UEC Global Leadership Training Program", and others.
2. Promotion of international student exchanges by accepting talented students, especially doctoral students, from overseas and expanding study abroad programs for UEC students.
3. Enhancing international joint research based on "D.C. & I. Strategy".
4. Greater support for researchers, especially young researchers, for international collaboration.
5. Enhancing international publicity of research findings.

### ③ Enhancing the framework to support international education and research activities

1. Enhancing administrative functions to promote international cooperation.
2. Encouraging greater international awareness amongst our faculty and staff.
3. Developing the framework to provide support and opportunities for international students and researchers.
4. Conducting outreach activities to enhance interaction with the UEC international alumni community.

# What is Comprehensive Communication Sciences?

The University of Electro-Communications (UEC) has been advocating “Comprehensive Communication Sciences” as a core philosophy to promote academic activity for education and research.

[URL http://www.uec.ac.jp/eng/about/comprehensive\\_communications.html](http://www.uec.ac.jp/eng/about/comprehensive_communications.html)

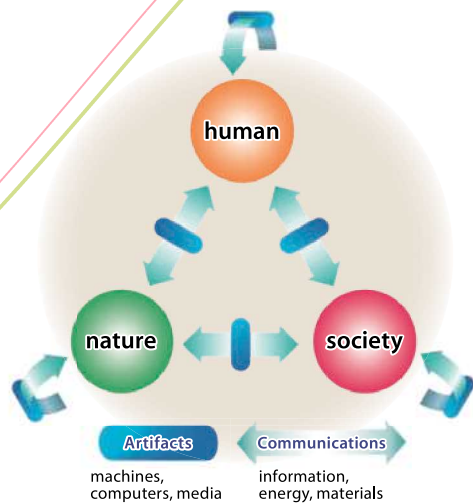


Fig. 1. Scheme of tripartite communication among humans, societies and the natural environment.

## Scientific and Engineering Research in the 21st Century

Up to and including the 20th century, individual disciplines matured somewhat independently of other disciplines. Even isolated researchers might have been able to contribute to the progress of science and engineering without any help from researchers in other fields. In the 21st century, however, it is difficult to make new discoveries and/or develop innovative technology without

any collaboration with experts in other complementary fields, because outstanding research achievements tend to only occur as a result of integrating elemental technologies of high quality. In other words, every researcher needs to cooperate with other excellent researchers with special knowledge and/or technologies that he or she is unfamiliar with.

This implies that we should have the capability of sharing ideas with people who work outside our own expertise, and that we should remain interested in what is happening in other fields. All innovations in the 21st century require interactions among researchers working in different disciplines, including social studies and humanities. It is most important for us to exchange ideas and technologies between researchers, i.e., communication and interaction between different research fields.

## What is Comprehensive Communication Sciences?

There are various kinds of exchanges of information, energy and materials between humans and societies, humans and the natural environment, and societies and the natural environment. The word “communication” is generally used to represent the verbal or nonverbal exchange of ideas among humans. Here we expand the concept of “communication” and redefine it to mean all exchanges of

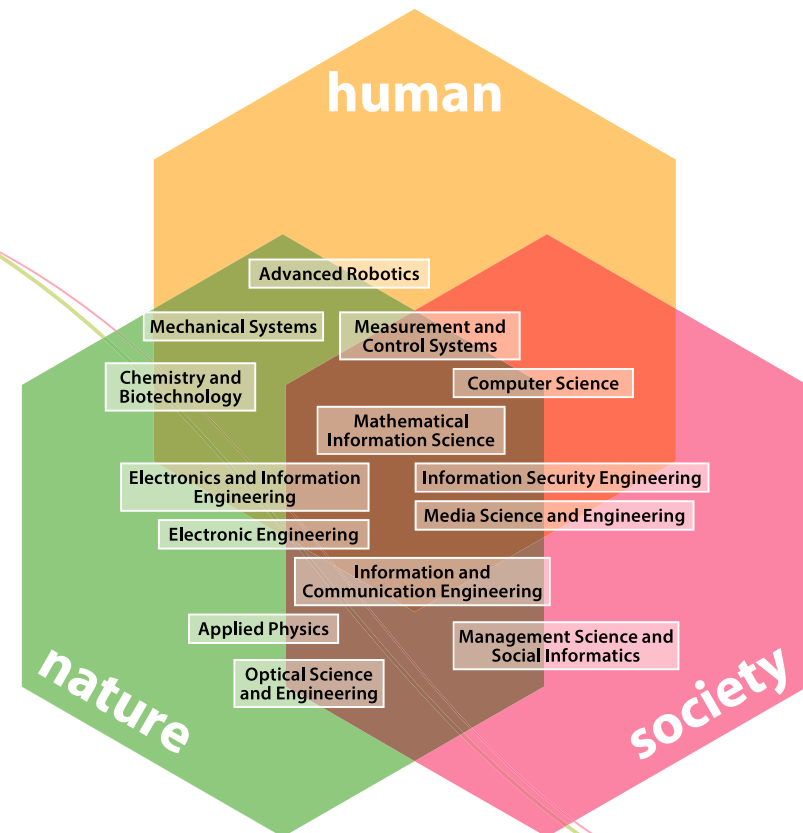


Fig. 2. Scatter plot of 14 education programs based on tripartite communication.

information, energy and materials, as shown in Figure 1. Today, the exchanges are often mediated by manufactured artifacts. The use of the word “communication” in the phrase “Comprehensive Communication Sciences” refers to this redefined “communication”.

The basic philosophy of “Comprehensive Communication Sciences” is that there are two purposes of “communication”: (1) communication as a communication-oriented scientific and engineering research target and (2) communication as a tool for promoting research collaboration. It is important that individuals participating in a research team have projecting expertise, a wide range of interests and strong communication skills to make the team stronger.

These faculties provide people with solid bases on which they can interact synergistically to achieve individual targets that are coherently directed towards the common objective of a team. At present, UEC prepares 14 education programs for students and graduate students to become innovative people with those faculties. Figure 2 is a scatter plot of the 14 education programs based on tripartite communication. Thereby the students will be able to play active roles in the world after graduation.

Thus, on the basis of the philosophy of Comprehensive Communication Sciences, UEC is promoting research and education to contribute to making a more pleasant and sustainable societies.

# Research Centers in UEC

## 9 Education and research centers promoting advanced research

### Center for Neuroscience and Biomedical Engineering

Within the Center for Neuroscience and Biomedical Engineering, researchers from fields such as neuroscience, information engineering, biological engineering, ergonomics, robotics, and optics are collaborating to develop technologies to support welfare and medical care.

### Innovation Research Center for Fuel Cells

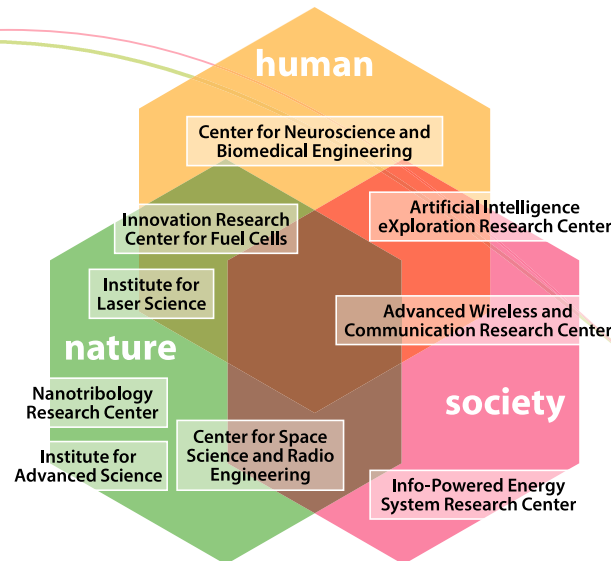
The Innovation Research Center for Fuel Cells (ICFC) is conducting evaluations and materials research for next-generation fuel cells. The ICFC is pursuing research with a new beamline BL36XU that can measure in real-time changes in catalysts, installed at the SPring-8 Synchrotron Radiation Facilities in Hyogo Prefecture.

### Institute for Laser Science

The Institute for Laser Science (ILS) is a research facility unique in Japan in conducting research in fields such as laser physics based on controlling light and atoms, atomic physics, astronomy, and quantum technology.

### Nanotribology Research Center

The Nanotribology Research Center is a focal point for education and research in fields related to nanotribology which aims to elucidate frictions at the atomic and molecular levels.



### Artificial Intelligence eXploration Research Center

The Artificial Intelligence eXploration Research Center (AIX) is aiming at realizing Artificial General Intelligence (AGI) vital for AI to co-exist with humankind, and collaborating with industry as it pursues its research.

### Advanced Wireless and Communication Research Center

The Advanced Wireless and Communication Research Center (AWCC) is pursuing the research and development of leading-edge technologies in wireless communications and the cultivation of human resources that can contribute internationally.

### Info-Powered Energy System Research Center

The Info-Powered Energy System Research Center (i-PERC) is tackling solutions to energy and environmental issues such as the expanded use of renewable energy.

### Center for Space Science and Radio Engineering

The Center for Space Science and Radio Engineering (SSRE) is pursuing the measurement of electromagnetic waves and their modelling. At Sugadaira Kogen in Nagano Prefecture, the Sugadaira Space Radio Observatory measures extraterrestrial radio waves.

### Institute for Advanced Science

The Institute for Advanced Science is pursuing the enhancement of research capabilities in physics fields and photochemistry fields, and striving to cultivate human resources that will play important roles in the future.

### !! e-Bulletin(UEC Research Portal)

The UEC e-Bulletin is a quarterly on-line publication launched in March 2014 providing regular updates of research being conducted at the University of Electro-Communications, Tokyo. The e-Bulletin includes short 'video profiles' of UEC researchers describing their latest findings on topics ranging from materials science to digital expression technology; atmospheric physics to soft-robots; and the latest laser technology for next generation communications networks.

[URL http://www.ru.uec.ac.jp/e-bulletin/](http://www.ru.uec.ac.jp/e-bulletin/)

### !! Irago Conference

The Irago Conference (Irago: Interdisciplinary Research and Global Outlook) is an international conference that is held jointly by UEC, Toyohashi University of Technology, and Tokai University. The conference has been held annually since 2011 with the objective of building an interdisciplinary platform for mutual understanding among experts from a wide range of fields. In particular, the organizers aim to have participating graduate students talk directly with internationally renowned researchers, engineers, entrepreneurs, and opinion leaders for a firsthand view of the major issues facing researchers and engineers of the 21st century.

[URL http://iragoconference.jp/](http://iragoconference.jp/)

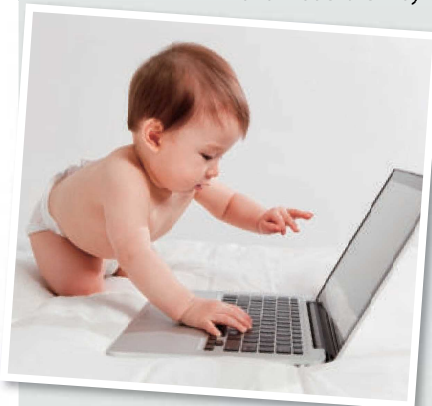
### !! Industry-UCB-UEC Workshop

The Industry-UCB-UEC Workshop (IUUWS) is a workshop that UEC and collaborative partner University of California, Berkeley (UCB) hold jointly. The workshop has participation from UEC, UCB, foreign and domestic industry. UEC and UCB are addressing the provision of platforms and service technologies for Society 5.0. IUUWS is based on the understanding that closer industry-academia collaboration with industry aiming to provide a platform for social innovation is indispensable in order to realize implementation and the collaborative framework by both universities. The workshop has been held since 2017 with the objective of building a collaborative platform and service technologies for the realization of "Society 5.0" in cooperation with industry, UCB and UEC.



## 1 Infant's Language acquisition

This study analyzes infant vocabulary acquisition processes and model them by big data analysis which



has not been used so much in the psychology field so far. Furthermore, the purpose of this study is to create a vocabulary test and vocabulary training system using the results of our research, and to provide them to speech therapists. (Prof. Yasuhiro Minami)

## 2 High speed, high reliability wireless Communications

In the future, a massive number of wireless devices communicate with each other while sharing the same limited radio resource. It is inevitable to allocate adaptively and efficiently limited radio resources to wireless devices to realize

high speed and reliable communication systems. To tackle such a difficult problem, we are studying wireless machine learning (WiML). WiML can realize autonomous resource allocation so as to adapt to dynamically changing wireless environment. (Assoc. Prof. Koichi Adachi)



## 3 Snake Robots

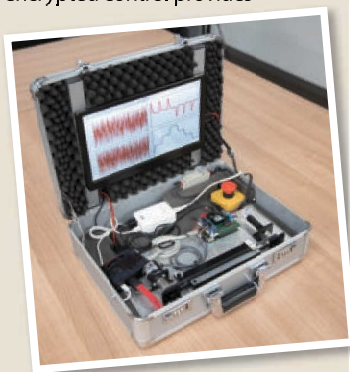
Snake robots are effective for inspection of narrow spaces and search-and-rescue operation in disaster sites. However, it is difficult to control snake robots because they have so many joints. We aim to achieve not only motion similar to a snake but also motion exceeding a snake by deriving a mathematical model and designing a controller. (Assoc. Prof. Motoyasu Tanaka)



# Broad Range of Fields in **Science** and **Technology**

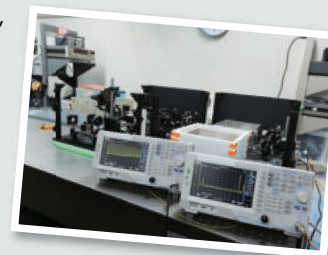
## 4 Cryptographic control technology

My laboratory has been studying the emerging area of encrypted control, an expected cybersecurity measure for automatic control systems. The encrypted control provides the secure implementation of a digital controller and a control system configuration. As one of the pioneers of this technology, we have worked to develop a computational framework, control-theoretic methods, and experimental systems for implementation and application of motion control systems. (Assoc. Prof. Kiminao Kogiso)



## 5 Optical frequency comb

"Optical Frequency Combs" is composed of large numbers of equally spaced, optical frequency modes, which has been known as the most precise "optical ruler" ever made by human-beings. Based on this technology, we are developing a fundamental technologies for controlling broad aspects of optical waves as an "optical synthesizer", and exploring broad innovative applications, such as environmental and medical sensing, characterization of materials and devices properties, ultrafast three-dimensional long distance measurements, which are expected to be a powerful tools for science, industry, and society. (Prof. Kaoru Minoshima)



## 6 In vivo visualization technology using light emission

Bioluminescence—exhibited by fireflies—is suited for in vivo visualization because it has high luminescence efficiency and does not generate heat. But the maximum bioluminescence wavelength (max) of 560 nm limits deep tissue imaging. UEC's innovative NIR luciferins (max=675 nm) are products: Akalumine<sup>1)</sup>, TokeOni<sup>2)</sup>, SeMpai<sup>3)</sup>. Akaluc<sup>4)</sup> is a specialized luciferase for AkaLumine and TokeOni. The system "AkaBLI<sup>4)</sup>" is the de facto standard for NIR in vivo imaging.

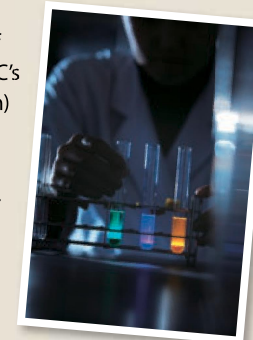
(Assoc. Prof. Shojiro Maki)

1) Tetrahedron, 69, 3847-3856 (2013).

2) Nature Communications, 7, 11856 (2016).

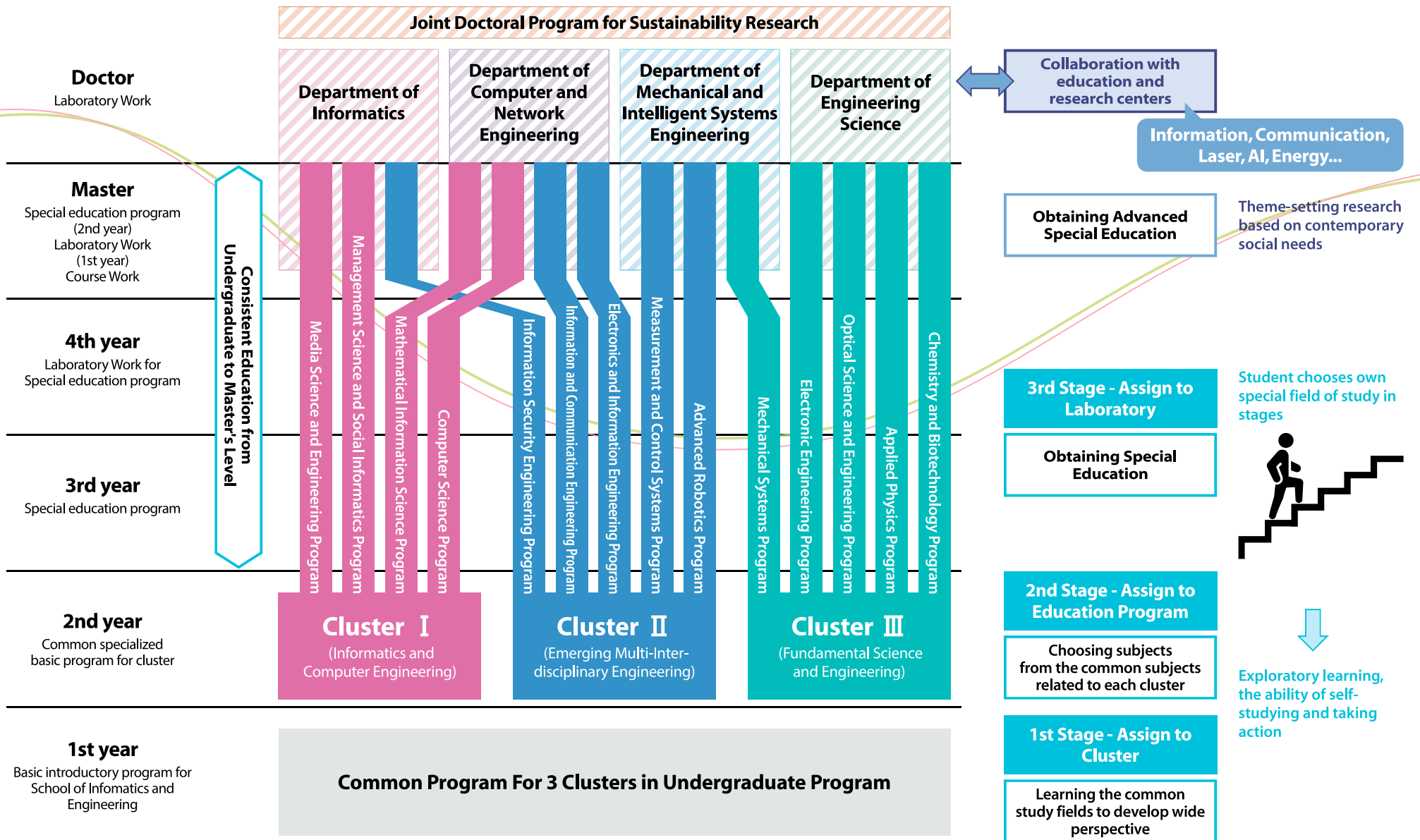
3) Bulletin of the Chemical Society of Japan, 92 (3), 608-618, (2019).

4) Science, 359, 935-939 (2018).



# Educational System

Beyond teaching the basics, the information engineering curriculum enhances expertise



# Disciplines

## Clusters and educational programs: disciplines to study

You can study widely in disciplines outside your chosen cluster and educational program.

Clusters (Undergraduate)		Educational Programs																				Departments (Master)	
Cluster	Program	Media Science and Engineering	Management Science and Social Informatics	Mathematical Information Science	Computer Science	Information Security Engineering	Information and Communication Engineering	Electronics and Information Engineering	Measurement and Control Systems	Advanced Robotics	Mechanical Systems	Electronic Engineering	Optical Science and Engineering	Applied Physics	Chemistry and Biotechnology	Department of Informatics	Department of Computer and Network Engineering	Department of Mechanical and Intelligent Systems Engineering	Department of Engineering Science				
Cluster I (Informatics and Computer Engineering)	Media Science and Engineering	●																					
	Management Science and Social Informatics	●	●	●	●	●	●	●	●	●	●	●	●	●	●					●			
	Mathematical Information Science		●	●	●	●	●	●	●	●	●	●	●	●	●					●			
	Computer Science				●	●	●	●	●	●	●	●	●	●	●					●			
Cluster II (Emerging Multi-Inter-disciplinary Engineering)	Information Security Engineering					●	●	●	●	●	●	●	●	●	●								
	Information and Communication Engineering		●	●	●	●	●	●	●	●	●	●	●	●	●								
	Electronics and Information Engineering					●	●	●	●	●	●	●	●	●	●					●			
	Measurement and Control Systems					●	●	●	●	●	●	●	●	●	●					●			
	Advanced Robotics					●	●	●	●	●	●	●	●	●	●					●			
Cluster III (Fundamental Science and Engineering)	Mechanical Systems					●	●	●	●	●	●	●	●	●	●								
	Electronic Engineering							●	●	●	●	●	●	●	●					●			
	Optical Science and Engineering							●	●	●	●	●	●	●	●					●			
	Applied Physics							●	●	●	●	●	●	●	●					●			
	Chemistry and Biotechnology										●	●	●	●	●					●			

# Research Activities in Graduate School

## Practice distinctive research activities in 5 majors

### Department of Informatics



Utilize information technology to create sophisticated applications in the media, management and security fields.

- Media Science and Engineering Program
- Management Science and Social Informatics Program
- Information Security Engineering Program

### Aiming to develop robots that have “skills”



**SONG QIUXI**  
Completed Master's degree in Mar., 2020  
Department of Informatics  
Home country/area : China

How can we realize the “skills” possessed by humans in robots? I am researching a framework for this. Currently I am working on the production of robots that can wrap string around a box and tie the string into a cross shape. I am aiming to enable the robots to master the “skills” of tying the cross while appropriately controlling the object being tied up and the position of the string.

I work as hard as I can to achieve my goals and I feel great joy when I can make the robots move as a result. The times when I have this sense of achievement are the happiest moments in my life as a researcher. In the future I would like to get a job at a company in Japan and utilize my current research to make a contribution to society.

UEC is a national university specializing in information engineering. There are a wide range of fields in the department so if you would like to deepen your science or engineering research I am sure you can find a laboratory that interests you. Other major attractions of the university are that it offers scholarships, it is highly regarded in society and the percentage of graduates of the university who find jobs is extremely high.

### Department of Computer and Network Engineering



Leap ahead in information, communications, and network technologies, the foundations of advanced communications society.

- Mathematical Information Science Program
- Computer Science Program
- Information and Communication Engineering Program
- Electronic and Information Engineering Program

### Increasing the reliability of communications networks



**Student**  
**BOHULU**  
**KWAME ACKAH**  
Doctoral Course 3rd year  
Department of Computer and Network Engineering  
Home country/area : Ghana

I belong to the Information Transmission Laboratory which has a research theme focusing on the basic problem in digital communications of how best to send and receive data accurately. In that context, my research pertains to error correcting codes, in particular the design of interleavers for concatenated codes. If I succeed in this research, it will become possible to further increase the reliability of existing communications networks.

I decided to study at UEC because I felt that here I could deepen the research themes I wanted to pursue. The campus is in the Tokyo Metropolitan Area but at the same time it is a quiet place with abundant greenery, so I can concentrate on my research. I value this calm atmosphere more than anything, and it is extremely encouraging that the university has put in place an environment that supports foreign students.

After graduating my dream is to return to my home town and become a professor at a university in Ghana. I would like to help develop the next-generation of leaders who will promote the development of my country.

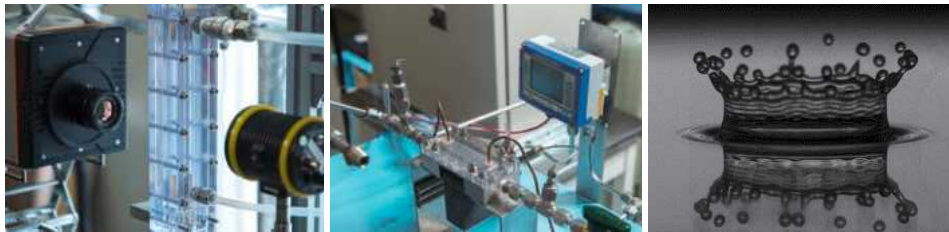
## !! Established new majors in 2019!

In April 2019, UEC joined with national university partners, Tokyo University of Foreign Studies and Tokyo University of Agriculture and Technology, to establish "Joint Doctoral

Program for Sustainability Research". The three universities are concentrating their respective strengths in educational resources to cultivate doctoral-level human resources that can contribute to

resolving various issues confronting the international community including environmental, energy, manufacturing, consumption, labor, hunger and poverty.

## Department of Mechanical and Intelligent Systems Engineering



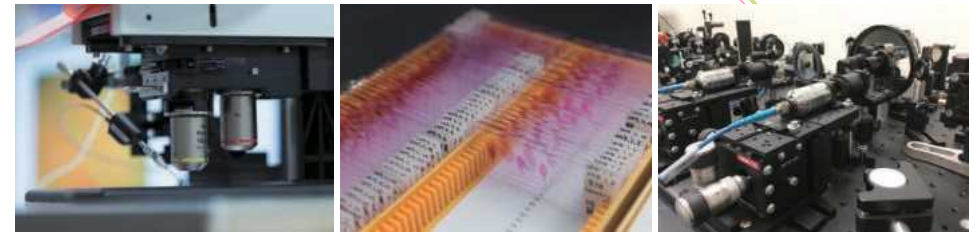
Combining measurement, control, robotics, mechanical engineering and promoting 'monozukuri' in harmony with humankind and the environment.

Measurement and Control Systems Program

Advanced Robotics Program

Mechanical Systems Program

## Department of Engineering Science



Aiming to create revolutionary next generation element technologies such as functional materials, energy, information processing, and information communications.

Electronic Engineering Program

Optical Science and Engineering Program

Applied Physics Program

Chemistry and Biotechnology

## Design of controllers for non-linear systems



**Student**  
**WONG KAI-YI**

Doctoral Course 3rd year  
Department of Mechanical  
Engineering and Intelligent  
Systems

Home country/area : Taiwan

I am researching the design of controllers for non-linear systems at the Kazuo Tanaka laboratory which is conducting research into "flying robots." I perform simulations using the numerical analysis software MATLAB, and if the results go well the controllers will be applied to an actual powered paragliding system. I think research is similar to growing flowers. You give them nutrition and they need time to grow. That process is probably boring but when those flowers bloom you can discover the enormous value and joy in the process up until that point.

At UEC there are many clubs that foreign students can also join, and events for the students are held frequently, so you can lead a meaningful student life. Furthermore, the university is in an extremely convenient location as it is surrounded by supermarkets, department stores, movie theaters, bookshops, electronics stores, etc.

In the future I would like to become a professor at a university in my home country and communicate the knowledge I learned in Japan and my experiences here to the students.

## Research into technology that enables telecommunications using light



**DELGADO**  
**FUENTES GABRIEL**

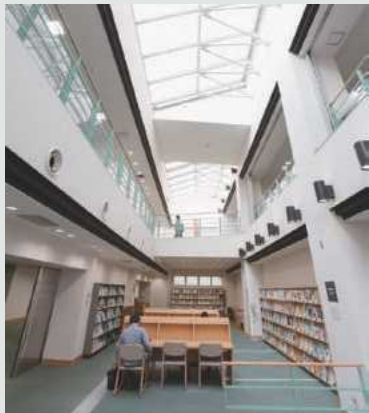
Completed Master's degree in  
Mar., 2020  
Department of Engineering Science  
Home country/area : Costa Rica

I am conducting research into silicon photonics. Silicon photonics is a technology that enables telecommunications using light at the microscale. Currently, it is mainly used by interconverting information based on optical signals and information based on electrical signals, but if this technology is established in the future, we will probably be able to build computers that operate using light rather than electricity. Through this research, I have experienced the entire development process for semiconductor devices, from material research for laser development to production evaluations using simulations and prototypes, etc. Through this kind of experience, in the future I would like to become a fully-fledged researcher in the development of technologies or products that are necessary and essential for the world.

The attraction of UEC is that it is in a quiet environment with a lot of nature but at the same time access to major places in Tokyo such as Shinjuku, Shibuya, Akihabara, etc. is good.

# Campus Life

The University of Electro-Communications offers all facilities on one campus. It is a campus that has built up approximately 60 years of history, and has an environment rich in greenery with many tall trees. It is a learning space that integrates cutting-edge education and research facilities with nature.



## A University Library

The University Library is the academic information center that supports the innovative research and education of the university. You can use the library's collection of more than 300,000 books by searching for specialized materials that cover a wide range of subjects, primarily engineering and the natural sciences, but also philosophy, social sciences, languages, and literature, etc. The library also provides materials that can be used on the web, such as electronic journals and databases, which can be accessed from PCs within the library and in the laboratories. The library has also put in place an environment for viewing audio-visual materials such as DVDs.

## !! A study space for group work ●● UEC Ambient Intelligence "Agora"

This is a space in which you can learn in a variety of styles, including practicing presentations using wireless presentation equipment, projectors, and a monitors, holding discussions using a glass whiteboard. It can hold over 220 people.



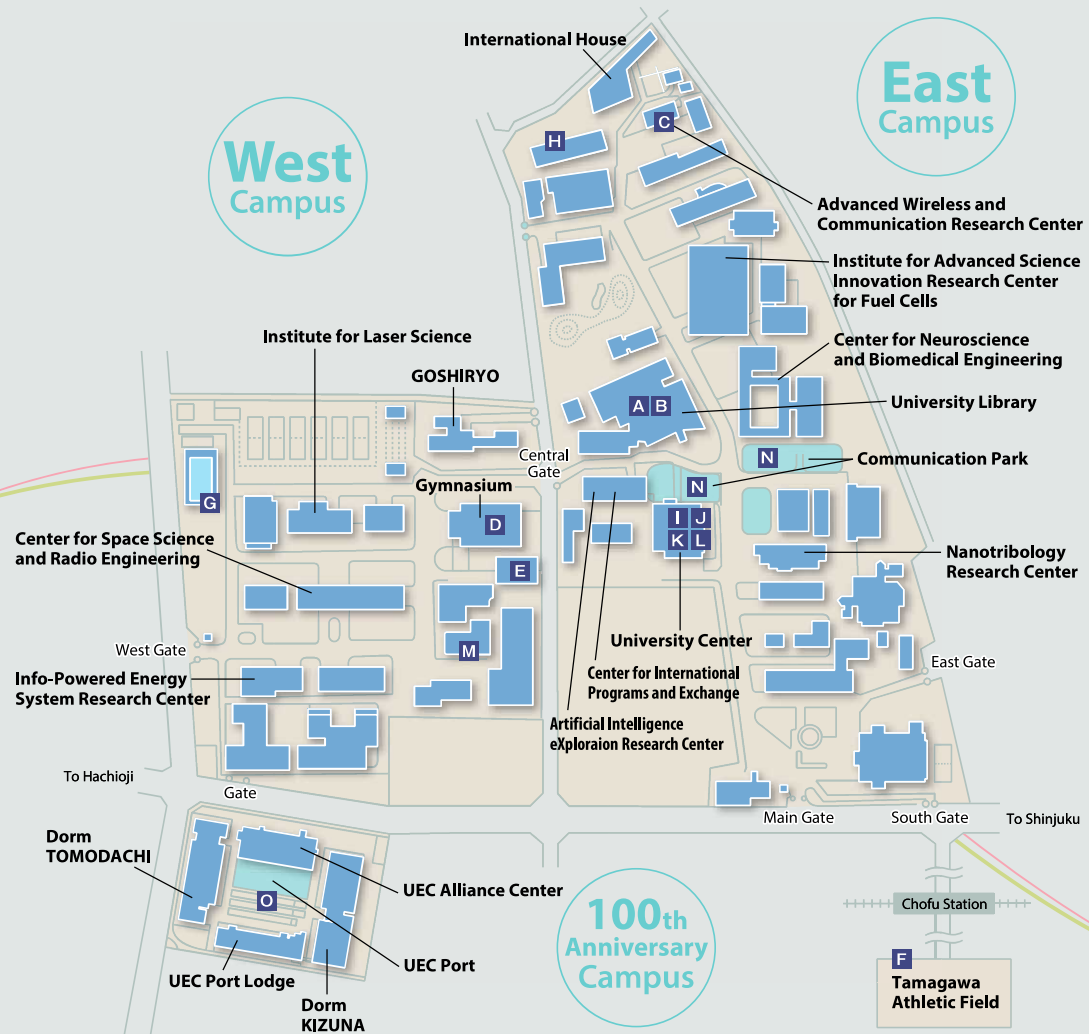
## B Information Technology Center

The Information Technology Center manages and maintains the information technology of UEC and promotes the computerization of education and research at the university and the efficient operation of the information systems shared by the entire university. In addition to the PCs and servers used in lectures, it provides cloud-type file synchronization services, on-campus SNSs. A total of 264 educational PCs have been installed in the exercise classrooms in the Information Technology Center and self-study rooms in the library.



## C UEC Museum of Communications

The UEC Museum of Communications collects, retains and exhibits historical equipment and documents related to wireless communications equipment and computers. Visitors can gain an overview of the research accomplishments of university and can encounter the historical background of general communication sciences.



## Exercise facilities



**D** Gymnasium: 2,530m<sup>2</sup>



**F** Tamagawa Athletic Field: 38,187m<sup>2</sup>



**E** Gymnasium II: 642m<sup>2</sup>



**G** Swimming Pool

## H Facilities for Extracurricular Activities



In addition to the rooms for each club, it also has an athletic training room, a music practice room, a meeting room, etc.

## I University Center



This center has a small shop and barber on the first floor and a cafeteria and restaurant on the second and third floor, respectively. There is also a multi-purpose hall, music practice room with a piano, meeting room, Japanese-style room, and lobby in the center.



**J** Co-op shop (1F)



**K** Co-op cafeteria (2F)



**L** Restaurant Harmonia (3F)



**M** West Cafeteria (West Campus)

## N Communication Park

This is utilized as a place for students, faculty members, local residents, and visitors from off-campus to have social exchanges with each other. There are free spaces established on campus for meeting up with people, conversations, reading, study.



## O 100th Anniversary Campus "UEC Port"

"UEC Port" was in commemoration of the 100th anniversary of the founding of UEC. It is intended to be a "Port" that fosters innovation by connecting the region and society with the university. It is located on the south side of the university and has student dormitories, buildings for joint research with off-campus research institutions, and other facilities.



## Dormitory



UEC PORT

### UEC PORT

**Type:** compartment type and shared utility type  
**For:** regular student  
**Number of rooms:** 400 (Mixed Japanese students and international students)  
**Fees (per month):** 47,700JPY (compartment type), 40,700JPY (shared utility type)

### GOSHIRYO

**Type:** shared utility type  
**For:** regular and Non-regular student  
**Number of rooms:** 120 (Mixed Japanese students and international students)  
**Fees (per month):** 14,500JPY

### International House

**Type:** compartment type  
**For:** Non-regular student (single room), regular student (couple room and family room)  
**Number of rooms:** 50 (single room), 6 (couple room), 3 (family room)  
**Fees (per month):** 23,770JPY (single room), 31,320JPY (couple room), 39,070JPY (family room)

## Off-campus facilities



Sugadaira Seminar House



Student Hostel (Hamami Ryo)



# Annual schedule of the University and Education system in Japan

## Annual schedule of the university

Spring semester

- Early April
  - Entrance ceremony
  - New academic year and spring semester begin
- Early June
  - Laboratories open day
- Mid-July
  - University open day
- Mid-August
  - End of spring semester
  - Summer recess begins
- End of September
  - End of summer recess



Autumn semester

- Early October
  - Autumn semester begins
- Late November
  - Chofu-Sai (University festival)
  - University open day
- Late December
  - Winter holidays begin
- Early January
  - End of winter holidays
- Late February
  - End of autumn semester
  - Spring recess begins
- Late March
  - Graduation ceremony



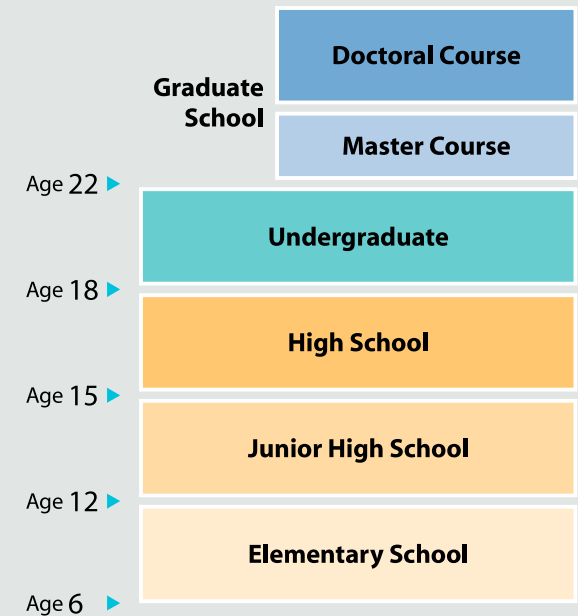
## Education system in Japan

In Japan, 6 years of elementary school and 3 years of junior high school are compulsory. After completing compulsory education, many students choose to study in high school for three years. At the higher education level, universities offer 4-year undergraduate program, 2-year Master's program and 3-year doctoral program.

There are about 780 Universities in Japan.

- 86 National Universities
- 93 Public Universities
- 603 Private Universities (in 2019)

\* from the Basic School Survey (by MEXT)  
UEC is one of National Universities



### !! Tuition Exemption

- UEC has tuition waiver systems for its students, and many international students get full or half tuition exemption.

### !! Scholarships

- There are many scholarship programs for international students, offered by Japanese government (Monbukagakusho: MEXT), Japan Student Service Organization (JASSO), and private foundations. UEC's Center for International Programs and Exchange (CIPE) helps students to apply for the scholarships from the private Foundations.





# Privately-Funded International Students for **Undergraduate Program** School of INFORMATICS & ENGINEERING (IE)

Refer to the following URL for latest outline of the exam and schedule in Japanese:

URL [http://www.uec.ac.jp/admission/ie/exam\\_international.html](http://www.uec.ac.jp/admission/ie/exam_international.html)

## Application Requirement

An applicant must be a holder of a high school diploma or equivalent to 12 or more years of formal education outside of Japan or must expect to complete a minimum of 12 years of formal education by March 31.

Also, an applicant must take the TOEFL (excluding TOEFL - ITP) or TOEIC L&R (excluding TOEFL - IP) after April 2019 and meet the following score.

**TOEFL : 453 points or more (PBT)**

**46 points or more (iBT)**

**TOEIC : 450 points or more (L&R)**

\* For TOEFL score issued on or after August 1, 2019, not "My Best Score" but "Test Date Score" will be utilize.

## Schedule

The Japanese academic year begins in April and ends in March. The first semester lasts from April to September, and the second semester lasts from October to March.

<b>November:</b>	Distribution of application guidelines
<b>January:</b>	Application period
<b>February 25:</b>	Written examination
<b>February 27:</b>	Oral examination
<b>March:</b>	Announcement of results
<b>April</b>	Enrollment

## Screening Methods

A comprehensive screening will be conducted based on the applicant's performance on oral and written examinations, the Examination for Japanese University Admission for International Students (EJU "日本留学試験"), TOEIC or TOEFL score, and academic transcripts from previous schools.

## EJU (Examination for Japanese University Admission for International Students "日本留学試験"):

<b>Subjects:</b>	Japanese
	Sciences (Physics and Chemistry)
	Mathematics (Course 2)

## TOEFL or TOEIC:

You must submit either your original TOEIC score certificate or TOEFL examination score report with your application. The original score sheet must have been issued within 2 years of April 1 in the desired entrance semester.

\* MyBest scores are not adopted (TOEFL iBT).

## Written examination at UEC:

<b>Subjects:</b>	Mathematics
	Physics and Chemistry
	Japanese Ability

\* The mathematics and science portions of written examinations for privately-funded foreign students are the same as those in the School of IE standard entrance examination administered on the same day.

\* Please see the following link for information about the contents of recent past written examinations other than the Japanese proficiency test:

URL <http://www.uec.ac.jp/admission/ie/exam.html>

## Oral examination:

You will be asked questions such as reason for applying, motivation for study and others.

## Tuition and Fees

<b>Screening fee</b>	<b>17,000JPY</b>
<b>Admission fee</b>	<b>282,000JPY</b>
<b>Tuition</b>	<b>535,800JPY</b> (per academic year)

Details are subject to change.



# Privately-Funded International Students for **Master's Program** in Graduate School of INFORMATICS & ENGINEERING (IE)

- Refer to the following URL for latest outline of the exam and schedule in English:

URL [http://www.uec.ac.jp/eng/admission/ie\\_graduate/exam.html](http://www.uec.ac.jp/eng/admission/ie_graduate/exam.html)

URL [http://www.uec.ac.jp/eng/admission/ie\\_graduate/schedule.html](http://www.uec.ac.jp/eng/admission/ie_graduate/schedule.html)

- Please be sure to contact your potential academic supervisor to discuss your prospective research plan before filling out an application. Refer to the following URL for contact:

URL [http://www.uec.ac.jp/education/graduate/faculty\\_member.html](http://www.uec.ac.jp/education/graduate/faculty_member.html) (in Japanese)

URL <https://cf.arc.uec.ac.jp/labsearch/> (Laboratory Search in Japanese)

URL <http://kjk.office.uec.ac.jp/scripts/websearch/index.htm?lang=en> (Researcher Search in English)

URL <https://www.uec.ac.jp/eng/research/introduction/> (Introduction to Research)

## Application Requirement

An applicant must hold a bachelor's degree or equivalent or must expect to receive a bachelor's degree by September 30 of the year of the screening (for October enrollment) or March 31 of the year of the examination (for April enrollment).

## Schedule

<b>July - August:</b>	Application period
<b>August:</b>	Examinations
<b>September:</b>	Announcement of results Enrollment procedure (for October enrollment)
<b>October:</b>	Enrollment
<b>March:</b>	Enrollment procedure (for April enrollment)
<b>April:</b>	Enrollment

## Examination Methods

A comprehensive examination will be conducted based on the evaluation of the applicant's performance on the oral and written examinations and submitted application documents.

### 1. English:

Your original TOEFL (iBT), or TOEIC L&R score sheet is required to evaluate your English ability. Please submit one of the above-mentioned original score sheets dated within 2 years of the month of the UEC entrance examination. Please note that the submitted documents will not be returned. TOEFL-ITP and TOEIC-IP score sheets will not be accepted. Your application will not be considered complete unless all required documents are submitted.

#### Important Attention

In the view of the effect of COVID-19, we decide to exclude score sheet of English Exam (TOEIC L&R, TOEFL) from submission documents. This is a special measure only from 2020.4 to 2021.3.

### 2. Specialized Subject:

The contents of the entrance examination vary depending on your major. Please refer to the Japanese-language admission guidelines or the admission overview website.

### 3. Oral examination:

Your academic achievement in your specialized subject, and research plan will be discussed during the oral examination. International students' Japanese language skills will be tested also.

## Tuition and Fees

<b>Screening fee</b>	<b>30,000JPY</b>
<b>Admission fee</b>	<b>282,000JPY</b>
<b>Tuition</b>	<b>535,800JPY</b> (per academic year)

**Details are subject to change.**

## !! Student Development Program for Multifaceted International Collaboration Hubs (MICH)

URL [http://www.fedu.uec.ac.jp/en/future\\_students/mich/](http://www.fedu.uec.ac.jp/en/future_students/mich/)

The "Student Development Program for Multifaceted International Collaboration Hubs (MICH)" is a new international graduate program offered by the Graduate School of Informatics and Engineering, the University of Electro-Communications (UEC). The program starts in the Fall Semester of academic year 2020. The program has been



# Privately-Funded International Students for **Doctoral Program** in Graduate School of INFORMATICS & ENGINEERING (IE)

- Refer to the following URL for latest outline of the exam and schedule in English:

URL [http://www.uec.ac.jp/eng/admission/ie\\_graduate/exam.html](http://www.uec.ac.jp/eng/admission/ie_graduate/exam.html)

URL [http://www.uec.ac.jp/eng/admission/ie\\_graduate/schedule.html](http://www.uec.ac.jp/eng/admission/ie_graduate/schedule.html)

- Please be sure to contact your potential academic supervisor to discuss your prospective research plan before filling out an application. Refer to the following URL for contact:

URL [http://www.uec.ac.jp/education/graduate/faculty\\_member.html](http://www.uec.ac.jp/education/graduate/faculty_member.html) (in Japanese)

URL <https://cf.arc.uec.ac.jp/labsearch/> (Laboratory Search in Japanese)

URL <http://kjk.office.uec.ac.jp/scripts/websearch/index.htm?lang=en> (Researcher Search in English)

URL <https://www.uec.ac.jp/eng/research/introduction/> (Introduction to Research)

## Application Requirement

An applicant must hold a master's degree or related technical degree or must be a candidate to obtain a master's degree by September 30 of the year of examination (for October enrollment) or March 31 of the year of the examination (for April enrollment).

## Schedule

(1) August Screening for October or April enrollment

<b>July:</b>	Application period
<b>August:</b>	Oral examination
<b>September:</b>	Announcement of results Enrollment procedure (for October enrollment)
<b>October:</b>	Enrollment
<b>March:</b>	Enrollment procedure (for April enrollment)
<b>April:</b>	Enrollment

(2) February Screening for April enrollment

<b>January:</b>	Application period
<b>February:</b>	Oral examination Announcement of results
<b>March:</b>	Enrollment procedure
<b>April:</b>	Enrollment

## Examination Methods

Comprehensive examination will be conducted by UEC based on English ability, the evaluation of performance on oral examination, and submitted application documents.

### 1. English Ability:

Your original TOEFL (iBT), or TOEIC L&R score sheet is required to evaluate your English ability. Please submit one of the above-mentioned original score sheets dated within 2 years of the month of the UEC entrance examination. Please note that the submitted documents will not be returned. TOEFL-ITP and TOEIC-IP score sheets will not be accepted. Your application will not be considered complete unless all required documents are submitted.

#### Important Attention

In the view of the effect of COVID-19, we decide to exclude score sheet of English Exam (TOEIC L&R, TOEFL, IELTS) from submission documents. This is a special measure only from 2020.4 to 2021.3.

### 2. Oral Examination:

Your academic achievement in your specialized subject, master's degree thesis, and research plan will be discussed during the oral examination. International students' Japanese language skills will be tested also.

## Tuition and Fees

Same as Master's Program (P17).

**Details are subject to change.**

selected to be part of the prestigious Japanese government (MEXT) special scholarship program. The program aims to graduate engineers and scientists who can bridge the gap between fields of specialization, industry and academia, and national borders, forming a network of trained individuals who can collectively contribute to SDGs, higher education

in developing countries, etc. To this end MICH recruits excellent international students interested in Informatics and Engineering. They will be joined by Japanese students, who study under the same curriculum, and together they are expected to become global leaders with broad perspectives.



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