

Promotion of Industry and Mining Development

【Outline of University Program】

1) Electrical Engineering field

We offer a wide variety of classes in the field of electrical and electronic field such as power engineering, system engineering, and semiconductor engineering. And we assign faculty members who are able to teach them in English. Especially, in the field of power engineering, classes on energy generation, energy transportation, energy usage, and energy analysis are offered in a systematic manner. In addition, classes on solar cells and fuel cells that are expected as next-generation energy source are also offered. Furthermore, we offer classes on fundamental mathematics, electromagnetism, circuit analysis, etc., which are common in the electrical and electronic field, so that the students can improve their basic knowledge. Students' research themes are selected from the topics given by the professors, and the researches are supervised by the professors. The students prepare master thesis based on their research results. Students are given the opportunities to make presentations at international conferences.

2) Mechanical Engineering field

(i) Learning the whole region of Mechanical Engineering, Applied Material Mechanics, Micro Processing, Combustion Engineering, Compressible Fluid Mechanics, Tribology, Robotics, Multi-body Dynamics, and so on, the foreign students can obtain the fundamental knowledge to solve a given theme.

(ii) Learning the fundamental theory with respect to Factory Automation, Advanced Dynamics, Statistics for Engineers, Control System, Human and Mechanical Engineering, Remote Sensing System, Cost Engineering, and so on, they can use the knowledge to solve a given theme.

(iii) Adopting Robotics, Electromagnetic Levitation, Web Handling, Processing of Wire Drawing, and Development of Thin Film as fundamental technologies for Factory Automation, the course gives the foreign students respective research themes that are chosen by them.

(iv) They make a presentation of the above results in domestic and foreign conferences and make a master's thesis as a comprehensive compilation of the results.

For further info, please refer page 7 of the Application Guideline.

Tokai University
Graduate School of Engineering

Sub-Program/ Component	Realization of Sustainable Economic Growth and a stable society/Improving of Social and Economic Infrastructure (Promotion of Industry and Mining Development)
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1	University	Tokai University (Private)
	Graduate School	Graduate School of Engineering
	URL of University	http://www.u-tokai.ac.jp/international/index.html
	URL of Graduate School	http://www.u-tokai.ac.jp/international/graduate/engineering.html
	Program name	Course of Electrical and Electronic System
	Degrees	Master of Engineering
	Credit and years needed for graduation	32 Credits, 2 Years

2 . Features of University

Tokai University is a private university established by Shigeyoshi Matsumae in 1942. We have 10 campuses and 21 undergraduate schools, 21 graduate schools and 2 professional graduate schools all over Japan. The main campus, called "SHONAN Campus", is located in Hiratsuka, Kanagawa about 50 km west of Tokyo. There are over 20,000 students studying at this campus.

"Tokai" of "Tokai University" refers to the sea to the east of Asia, namely the Pacific Ocean, and symbolizes the desire to foster the kinds of big hearts, rich spirits, and broad perspectives symbolized by the expanse of an ocean.

The white cross of the school flag symbolizes "Love" and "Justice," and expresses the presence of "Truth" where love and justice meet.

The Tokai University is one of the largest general education and research institutions in Japan today. To seek mutual understanding and global peace through the education of, and interaction with, young scholars from around the world, we began accepting foreign students from at early stage and have consistently promoted Japanese-language education.

The Educational Creed of Tokai University is as follows:

-Cultivate your thoughts in your early days

-Nurture your body in your early days

-Develop your intellect in your early days

-Aim your hopes towards the stars in your early days

This slogan reminds us that we should cultivate both our bodies and our minds to the fullest possible extent. If an individual has acquired deep insights into human nature, society, the natural world, historical processes, the world, and so on, he or she will be able to embrace high ideals and can lay the foundation for a deeper understanding of life.

3 . Features of Graduate School

<Overview>

The Graduate School of Tokai University is aimed at those students who want to pursue advanced research after graduating. As a result of the rapid technological advances of the last few years, our society has advanced and diversified, such that there is a greater need than ever before for human resources with high-level expertise and technical skills. In response to this, the demand for graduate school places is also increasing, as students seek to play a leading role in future society. In response to the demands, Tokai University established its graduate school, offering 50 specialist subjects in 21 postgraduate courses. The University is taking advantage of its undergraduate experience to realize a diversified and advanced learning site with close

cooperation between the postgraduate courses and specialties

The Graduate School of Engineering was established in 1963 with Course of Electric Engineering and Course of Applied Science. We had major organizational changes in 1976 and 2004, and now we offer 12 courses; Course of Information Science and Engineering, **Course of Electrical and Electronic System**, Course of Computer and Communications, Course of Applied Science, Course of Electro Photo Optics, Course of Industrial Chemistry, Course of Metallurgical Engineering, Course of Architecture and Building Engineering, Course of Civil Engineering, Course of Mechanical Engineering, Course of Aeronautics and Astronautics, and Course of Management Engineering. We cover almost all the fields in engineering field, which enables us to meet wide society needs, as well as fulfill various desires of students

We provide, in accordance with the founding spirit of Tokai University, curriculum to nurture personnel that have highly specialized skills, character and knowledge based on international perspectives. It also provides personalized research guidance by academic advisors that equip students with the ability to pose questions and formulate solutions to them. While global concern for environmental destruction arises, we place emphasis on what is a characteristic of Tokai, education to develop the whole person based on a proper outlook on history and the world. Through this, we aim to foster personnel who possess high standards of engineer ethics and passion to contribute to society.

In order to survive in an increasingly globalized society, internationalization is an essential issue for the future. As a component of internationalization, the Graduate School of Engineering has started course work in English from April of the academic year 2011 in electric, mechanical, civil, and architecture and building-related courses. The two objectives of this instruction are to improve English skills of Japanese students in specialized fields so that they are able to perform in the international society; and to acquire talented international students. In addition, the graduate school encourages and values the ability of students to present their research in English at an international conference, etc., which is an effective method to acquire international perspectives and awareness.

< Standards for Degree Conferral >

In the Graduate School of Engineering, a master's degree is awarded to a student who has acquired the following skills;

- 1) the ability to comprehend the preexisting literature of a research topic and the ability to define his/her research within that field,
- 2) the ability to design and carry out the necessary experiments for a research agenda, and 3) the ability to present their research results and to engage in a discussion about their research at an academic conference, etc.

< Standards for the Evaluation of a Graduate level Master's Thesis >

In the Graduate School of Engineering, the evaluation of a master's thesis is based on the following criteria:

- 1) A statement of the existing field of research and technological agenda to be solved
- 2) A statement of the novelty on a research result
- 3) Consistency in argumentation and lack of contradictions
- 4) Evaluation by more than one faculty excluding the advisor

4 . Features of the Program

>> Overview of Course of Electrical and Electronic System

The Electrical and Electronic Systems course aims to produce the human resources having advanced specialist skills and able to challenge technological development in the Electrical and Electronic fields by acquiring the theory and technology from the basics to the application of Electrical and Electronic Engineering. It is also our goal to generate human resources that are inventive and motivated who will be capable of identifying issues for themselves and then going on

to solve them. At the same time, it another of our important missions is to foster human resources that will be able to contribute to realizing a benevolent society that is aware of the natural environment. This is a basic educational philosophy of the University and the Information Science and Technology Department.

>>>> Features of the Program on Course of Electrical and Electronic System

(i) Learn electrical technologies such as energy generation and energy transmission- distribution which are the fundamental in the industry, to obtain the ability to apply the knowledge in the real world.

(ii) Obtain the ability to find and solve problems so that the students will be able to lead the electric and electronic engineering industry.

(iii) Obtain an ability to give presentations that would be accepted in international community by offering them opportunities to present their research results in conferences.

Since Graduate School of Engineering has the advantage of University-Industry-Collaboration-Research, the students will be able to have some experiences with companies related to their research field.

5 . Curriculum Necessary to Obtain to the Degrees

Lectures offered by Course of Electrical and Electronic System in English (As of April 2011)

Lecture (Lecture themes may be subject to change)	Credit
CONTROL SYSTEM	2
ELECTRIC COMMERCE	2
ELECTROMAGNETIC FIELD THEORY	2
FUEL CELL ENGINEERING	2
FUNDAMENTAL ELECTROMAGNETICS	2
INFORMATION NETWORK THEORY	2
LASER ENGINEERING	2
MAN=MACHINE SYSTEMS	2
OPTICAL FIBER COMMUNICATIONS	2
PHYSICAL MATHEMATICS	2
QUANTUM MECHANICS	2
ROBOT ENGINEERING	2
SCIENCE AND ENGINEERING OF SOLAR CELLS	2
SEMICONDUCTOR PHYSICS	2
SPATIOTEMPORAL INFORMATION PROCESSING	2
VISUAL INFORMATION PROCESSING	2

You can choose 10 credits from among the following lectures as well as the above mentioned lectures.

Lecture (Lecture themes may be subject to change)	Credit
ADVANCED ARCHITECTURAL ENVIRONMENTAL TECHNOLOGY	2
ADVANCED DYNAMICS	2
AERONAUTICAL ENGINEERING	2

APPLIED MECHANICS	2
ARCHITECTURAL PASSIVE SYSTEM PLANNING	2
ARCHITECTURAL PROFESSION	2
ARCHITECTURAL SPACE PLANNING	2
COASTAL HYDRAULICS	2
COMPRESSIBLE FLUID DYNAMICS	2
COMPUTATIONAL ENGINEERING	2
COSMICAL ELECTRODYNAMICS	2
GROUNDWATER ENGINEERING	2
LECTURE AND EXERCISES ON ARCHITECTURAL FOOTING DESIGN	4
LECTURE AND EXERCISES ON NON-STRUCTURAL MATERIALS	4
MAINTENANCE ENGINEERING	2
MICROMACHINING	2
MULTIBODY DYNAMICS	2
ROBOTICS	2
ROCKET PROPULSION	2
SPACE SYSTEM ENGINEERING	2
STATISTICS FOR ENGINEERS	2
STRUCTURAL DYNAMICS	2
TRIBOLOGY	2

6 . Academic Schedule

In early April:	Entrance ceremony (for spring semester)
In late September:	Commencement ceremony (for spring semester)
In late September:	Entrance ceremony (for fall semester)
In early November:	University festival
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7 . Facilities

The Shonan campus, the main campus of Tokai University, with a lush natural environment offers fully equipped educational and sport facilities spread across the sprawling University ground! Students who are enrolled in the Graduate School of Engineering spend their entire university life at this campus. This campus has an area of 508102 square meters, and almost 25000 students are studying here. There are 9 undergraduate schools, 9 graduate schools (master level) and 3 PhD courses offering diversity academic fields in this campus.

There are 1.43 million books among 4 libraries and 5 cafeterias on the campus. Furthermore, you can use a well-equipped fitness center (the charge for using this fitness center is 500 JPY/year), and computer centers (there are 36 rooms and 1900 PCs on the campus). Also we have a medical care office in cooperation with our School of Medicine.

For your rooms, we provide you the Tokai University International Residence for the first 6 months. The rooms are well-furnished. Utility charges are included in the room charge (45000JPY/month). After 6 months, when you get used to the university and Japan, we will offer you room information of some real estate companies that we recommend. There are many nice and cheap rooms around the campus.

8 . List of faculty members capable of guiding JDS fellows

Name	Title	Areas of specialization (Research Topics)
Hidenori Aoki	Professor	Electric power engineering/ Electric equipment engineering
Masao Isomura	Professor	Development of Thin-film Solar Cells
Takashi Inushima	Professor	Study of Nitride Semiconductors/Research of Superconductive Semiconductors
Ryuichiro Ohyama	Professor	Electronic fluid mechanics, Discharge chemistry
Kunio Okimura	Professor	Characterization of structural and electronic properties of transition metal oxide material
Hideki Kimura	Professor	Attainment of high efficiency on electric vehicles
Kiyoteru Kobayashi	Professor	Study of charge trapping dielectric films for advanced nonvolatile memory devices
Haruo Shindo	Professor	Plasma Nano-Technologies for Device Processes
Yoichi Hirose	Professor	Growth and Characterization of Related Carbon Materials
Kazushige Magatani	Professor	Biomedical engineering/ Biological material studies
Masayuki Morimoto	Professor	Electric power engineering/ Electric equipment engineering
Yoshiyuki Show	Professor	Application of carbon-based material such as carbon nanotube and amorphous carbon to clean energy technology

The academic advisers, the guidance of which is hoped by the respective international students, are officially determined due to an interview for each student after entrance into this course.

9 . Message for Applicants

To improve current science technology and to solve social issues, international-minded creative human resource with broad view and high knowledge is needed. To meet this demand, the Course of Electrical and Electronic System aims at developing human resource that have insight, broad view, high knowledge, deep understanding in his/her specialized field, as well as insatiable appetite to challenge unknown fields and the knowledge on non-special fields. We also want the students to have the conscience as a professional.

The course curriculum consists of “Energy”, “Circuit / Control / Information System” and “Electrical Properties”, as well as lectures on “Common basic subjects” and also “Research seminars” where students learn higher knowledge and technologies from the specialized professors.

The students will research their theme for two years, and it will be supervised by their professors. After two years of research, the students will prepare their master’s thesis to clarify their findings and remaining issues, and they will present the results in front of others.

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4 . Features of the Program

>> Over view of Course of Mechanical Engineering

This program covers the fields of mechanical engineering, such as the machining and measuring of machine systems and devices, mechatronics that combines electronics with control technology, robotics, and micro- and nanotechnologies.

>>>> Features of the Program on Mechanical Engineering

- (i) The foreign students can learn the technical knowledge in the whole region of Mechanical Engineering.
- (ii) Factory Automation has interdisciplinary aspects, so that they can learn the knowledge in the regions of not only Mechanical Engineering but also other fields.

(iii) They can acquire creativity, insight, and the procedure for logical consideration through theoretical and experimental analyses to solve a given theme.

() They can develop the ability to solve problems and the practical ability that the engineers should naturally have, making a master's thesis.

Since Graduate School of Engineering has the advantage of University-Industry-Collaboration-Research, the students will be able to have some experiences with companies related to their research field.

5 . Curriculum Necessary to Obtain to the Degrees

Lectures offered by Course of Mechanical Engineering in English (As of April 2011)

Lecture (Lecture themes may be subject to change)	Credit
ADVANCED DYNAMICS	2
AERONAUTICAL ENGINEERING	2
COMPRESSIBLE FLUID DYNAMICS	2
COSMICAL ELECTRODYNAMICS	2
FUEL CELL ENGINEERING	2
MICROMACHINING	2
MULTIBODY DYNAMICS	2
ROBOTICS	2
ROCKET PROPULSION	2
SCIENCE AND ENGINEERING OF SOLAR CELLS	2
SEMICONDUCTOR PHYSICS	2
SPACE SYSTEM ENGINEERING	2
SPATIOTEMPORAL INFORMATION PROCESSING	2
STATISTICS FOR ENGINEERS	2
TRIBOLOGY	2
VISUAL INFORMATION PROCESSING	2

You can choose 10 credits from among the following lectures as well as the above mentioned lectures.

Lecture (Lecture themes may be subject to change)	Credit
LECTURE AND EXERCISES ON ARCHITECTURAL FOOTING DESIGN	4
LECTURE AND EXERCISES ON NON-STRUCTURAL MATERIALS	4
ADVANCED ARCHITECTURAL ENVIRONMENTAL TECHNOLOGY	2
APPLIED MECHANICS	2
ARCHITECTURAL PASSIVE SYSTEM PLANNING	2
ARCHITECTURAL PROFESSION	2
ARCHITECTURAL SPACE PLANNING	2
COASTAL HYDRAULICS	2

COMPUTATIONAL ENGINEERING	2
FUEL CELL ENGINEERING	2
FUNDAMENTAL ELECTROMAGNETICS	2
GROUNDWATER ENGINEERING	2
LASER ENGINEERING	2
MAINTENANCE ENGINEERING	2
MAN=MACHINE SYSTEMS	2
OPTICAL FIBER COMMUNICATIONS	2
PHYSICAL MATHEMATICS	2
QUANTUM MECHANICS	2
ROBOT ENGINEERING	2
SCIENCE AND ENGINEERING OF SOLAR CELLS	2
SEMICONDUCTOR PHYSICS	2
STRUCTURAL DYNAMICS	2
VISUAL INFORMATION PROCESSING	2

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8 . List of faculty members capable of guiding JDS fellows

Name	Title	Areas of specialization (Research Topics)
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Akira Iwamori	Professor	Development of Thin Film
Yasuo Oshinoya	Professor	Electromagnetic Levitation)
Koichi Koganezawa	Professor	Robotics
Masao Kohzaki	Professor	Development of Thin Film
Hiromu Hashimoto	Professor	Web Handling
Yoshio Yamamoto	Professor	Robotics
Kazunari Yoshida	Professor	Processing of Wire Drawing)
Kazuyoshi Tsuchiya	Associate Professor	Development of Thin Film

The international students should consider very well who to select as own academic adviser, respectively, because the Course of Mechanical Engineering will send the research papers with respect to the investigations of master thesis by mail or email immediately after they pass the entrance examination. The academic advisers, the guidance of which is hoped by the respective international students, are officially determined due to an interview for each student after entrance into this course.

9 . Message for Applicants

Course of Mechanical Engineering takes up Robotics, Electromagnetic Levitation, Web Handling, Processing of Wire Drawing, and Development of Thin Film as fundamental technologies for Factory Automation and gives the respective foreign students the research theme based on them for the master thesis. This course can also provide advanced themes with respect to Material Engineering, Processing, Thermal Engineering, Fluid Engineering, Mechanics, and Control Engineering, covering the wide region of Mechanical Engineering, if the foreign students desire such a theme rather than that of Factory Automation. It is so significant which theme the foreign students choose, because the investigation can bring experiences to brush up their creativity, insight, and ability to resolve several problems, which they cannot obtain in ordinary classes. Moreover, they can go to PhD course after the master course if their will is permitted by the national organization in charge of them in Cambodia, because almost all the above academic advisers are the members of PhD course. The opportunity has a prospect of success, in which they are installed in a position to lead their technical fields, so that they might contribute to promote industrialization of Cambodia and to cultivate younger Cambodian as mechanical engineers.