Tohoku Institute of Technology
Guidebook 2017

From Creation to Integration
- Launched from Sendai -
Welcome to the Tohoku Institute of Technology. As a former student and then a teacher here, I have had the opportunity to see the learning situation from both sides. This unique experience helps me to understand the needs and desires of the students at this university and strengthens my determination to do my best for you all.

At our university, the word 'engineering' is used to embrace the study of natural science, while also incorporating study of the humanities and social science.

Students here will study and contribute to the safety and convenience of society, helping to create a comfortable environment for the betterment of people’s health, and work to explore the theories and technologies that contribute to people’s welfare.

Now it is said to be the century of the environment. Innovation in the approach to engineering is required in order to achieve the sustainability of society. It is also vital that we act to aid in the creation of a rich and beautiful society in which all its members can live in peace and comfort. With this vision in mind, the life design faculty was founded at our university in 2008. Its maxims are practical learning and interdisciplinary research.

Our university is a place where people of a variety of personality and talent can gather, develop their possibilities and potentials, and prepare themselves to move on to the next stage in their lives. The people you meet and the experiences you will have here through your learning will help to give you both a highly specialized and a diversified outlook.

The university strives to create graduates who will be business people, thinking and acting for themselves and playing leading roles as engineers and creators within and for society and the community.

To help each individual who begins their future at this university, it is my mission to help you to reach your goals and I promise to put all my efforts into helping you to achieve your dreams.
ABOUT US
OUR PHILOSOPHY AND PRINCIPLES

Founding Principles
The Tohoku Institute of Technology will nurture advanced technicians and engineers who will become industry leaders, particularly in the Tohoku region.

Philosophy
The Tohoku Institute of Technology will contribute to the development of a sustainable society through education and research activities.

Educational Policy
The Tohoku Institute of Technology will cultivate human resources who will become specialists in their field, who will possess a harmonious personality, and who can demonstrate superior creativity and the ability to get things done.

Expectations of Our Students:
The following skills and abilities obtained in an honest and motivated manner are expected:

1. Knowledge and comprehension
   Scientific knowledge and technical skills which are associated with culture, humanity and sociality.

2. Logical thinking and analyzing skills
   Ability to find, analyze and solve problems based on phenomena and results.

3. Cooperativeness and adaptability
   Ability to address problems spontaneously as a member of a group.

4. Communication skill
   Ability to develop greater self-expression and mutual understanding.

5. Ability to define problems and develop management skills
   Eagerness to discover new phenomena and deal with problems.

6. Ability to develop global understanding and language skills
   Ability to see things from different perspectives and develop skills to operate in an international market place.

AEGG Policy:
In addition to the following policies (A/E/G), Tohoku Institute of Technology values are also based on a teaching policy (G) to aid in developing a zest for living and respect in both the university and the wider society.

Admission Policy
To meet our education goals, we offer admission to students with following abilities:

1. Students with basic academic knowledge and the ability to facilitate general judgment
2. Students with special abilities in special subjects
3. Students with enthusiastic and clear goals
4. Students with remarkable achievements and special skills

Educational Policy (Composition and Enforcement Policy)
1. Establishment of GPA (grade point average) goals for each department
2. Correlation of each subject and students' required competence
3. Integration of major and general subjects to develop a social point of view and to enhance character formation
4. Small-class education
5. Creation of curriculum models for each department and course

Graduation Policy (Conferment Policy)
We evaluate the above mentioned expected skills and abilities on each subject. We also evaluate graduation project or work in a systematic and objective manner as part of the total evaluation.

Guidance Policy
Guide students in building their future plan while promoting respect for other members of society.

1. Create awareness of each student being a part of society through non-curricular activities
2. Deepen professional awareness through professional career programs.

FACTS AND FIGURES

Overview
Established in 1964; Graduate School established in 1992
President: Mitsunobu Miyagi, the 8th President
Private University
Location: Yagiyama Campus; 35-1, Yagiyama Kasumi-cho, Taihaku-ku, Sendai 982-8577
Nagamachi Campus; 6, Futatsusawa, Taihaku-ku, Sendai 982-8588
Area of campus: 318,307 m²

Academics
Full time faculty member: 133
Undergraduate student-to-faculty ratio: 19.7 : 1
Faculties: 2 (Engineering and Life Design)
Departments within the University: Department of Electrical and Electronic Engineering, Department of Information and Communication Engineering, Department of Architecture, Department of Civil Engineering and Management, Department of Environment and Energy, Department of Creative Design, Department of Life Design for Safety and Amenity, Department of Management and Communication
Library holdings: 253,387 in 2 libraries

Students
Student enrollment: 3,111 students in total (3,067 undergraduates, 44 graduates)
Students from abroad: 9 students

(As of 2017)
**HISTORY**

- **January 1964** Establishment of the Tohoku Institute of Technology was authorized.
- **April 1964** The Tohoku Institute of Technology was inaugurated. Faculty of Engineering comprising Departments of Electronics and Communication Engineering was established.
- **April 1966** Department of Architecture was established.
- **April 1967** Departments of Civil Engineering and Industrial Design were established.
- **July 1968** Data Processing Center was established.
- **April 1982** Information Technology Education Center was established.
- **April 1985** Informatics Laboratory was established.
- **April 1990** Futatsusawa Campus was founded.
- **April 1992** Master’s programs for the Graduate School of Engineering (Graduate Schools of Communication Engineering, Architecture, and Civil Engineering) were established.
- **April 1993** Master’s program for the Graduate School of Electronics was established.
- **April 1994** Doctoral programs for the Graduate Schools of Communication Engineering and Architecture were established.
- **April 1995** Doctoral programs for the Graduate Schools of Electronics and Civil Engineering were established.
- **June 1997** High-Tech Research Center was established.
- **April 2000** Master’s program for the Graduate School of Industrial Design was established.
- **April 2001** Department of Environment and Energy was established.
- **April 2002** Doctoral program for the Graduate School of Industrial Design was established.
- **April 2003** Japanese names of Departments of Civil Engineering and Industrial Design were changed. Doctoral program for the Graduate School of Environmental Information Engineering was established.
- **October 2003** Satellite Campus “Ichibancho Lobby” was founded.
- **April 2004** Department of Communication Engineering was renamed Department of Information and Communication Engineering.
- **April 2005** New Technology Creation Hatchery Center, e-Learning Center, and Information Center were established.
- **April 2007** Department of Electronics was renamed Department of Electronics and Intelligent Systems.
- **April 2008** Faculty of Engineering was reorganized as Faculties of Engineering and Life Design. Departments of Creative Design, Life Design for Safety and Amenity, Management and Communication were established. Kasumicho and Futatsusawa Campuses were renamed Yagiyaama and Nagamachi Campuses, respectively.
- **March 2011** The 2011 Tohoku earthquake and tsunami occurred.
- **April 2011** Department of Civil Engineering was renamed Department of Civil Engineering and Management.
- **April 2012** Department of Environmental Information Engineering was renamed Department of Environment and Energy. Master’s program for the Graduate School of Industrial Design was established.
- **June 2014** 50th anniversary of the establishment of the Tohoku Institute of Technology.
- **April 2017** Department of Electronics and Intelligent Systems was renamed Department of Electrical and Electronic Engineering.

**ACADEMIC CALENDAR**

- **April**
  - Entrance ceremony
  - Orientation for the first semester
  - First semester begins
- **June**
  - Open campus
- **July**
  - First semester exams
  - First semester ends
  - Open campus
- **August**
  - Summer vacation
- **September**
  - Orientation for the second semester
  - Second semester begins
- **October**
  - University festival
  - Open campus
  - University anniversary
- **December**
  - Winter vacation
- **January**
  - Second semester exams
  - Second semester ends
- **February**
  - Spring vacation
- **March**
  - Commencement

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TOHOKU INSTITUTE OF TECHNOLOGY
ABOUT US

HISTORY

ACADEMIC CALENDAR

06
UNDERGRADUATE STUDY

Department of Electrical and Electronic Engineering

Technologies created through electrical and electronic engineering are widely used around the world and found in such things as automobiles, smart-phones, medical care equipment, electric power, communication equipment and so on. Engineers who have studied electrical and electronic engineering are indispensable for maintaining a convenient and safe society and for future development in this field. Our curriculum has been designed to cover the educational requirements for students who wish to become highly skilled professionals in this field.

All first and second grade students learn basic knowledge about electrical and electronic engineering while learning general liberal arts subjects. Third graders acquire expert knowledge of electrical and electronic engineering. The 4th grade students will carry out undergraduate research training on one of the following three fields according to their preference.

Mechatronics and Robotics:
Students will study microcomputers, system control, visual recognition, speech understanding, sensor networks or wearable computing, etc. to make smart robotics and mechatronics equipment smarter.

Medical and Biological Engineering:
Students will conduct research on biometrics and life science such as bioelectric signals, electrochemistry, medical diagnostic and image measurement technology, or neural networks using iPSC cells.

Optical and Information Devices:
Students will learn the technologies related to optical and information devices and will research optical elements, display devices, radiation detection devices or devices using nanotechnology.
Department of Information and Communication Engineering

Our country is a world leader in not only computer and communication technologies but also in the fields of hardware and software development. Expertise in these areas is expected to continue to be in high demand. Students in this department can study fundamental technologies supporting high-speed networks, computer communication and information processing. For third year students, our program is divided into two courses: Communication Course and Information Course.

**Communication Course**

This course allows a thorough study of Communication Technology. Research themes are roughly divided into the study areas of Light Wave, Electric Wave, Electromagnetic Wave, and Ultrasonic Electronics.

**Information Course**

This course enables students to study Information Technology in depth. Research themes are roughly divided into the study areas of Programming, Software, Information Networks and Mathematics.

Department of Architecture

Architecture integrates a comprehensive understanding of social science and engineering technology. Our department is one of the pioneers in offering architecture education in Northeast Japan.

Our courses focus on architectural design, urban planning, and building construction, which enables students to develop art design skills and professional technology knowledge. The details of the curriculum are shown below. Every year many of the graduates pass the examination for "Kenchikushi" (qualified architect and building engineer) licenses.

**Architectural System and Engineering Course**

The curriculum places emphasis on structural engineering, vibration control, environmental engineering, building materials, and construction engineering. The students will improve their techniques and knowledge through experiments and practical experience.

**Architectural Planning and Design Course**

The curriculum places emphasis on art design, architectural history, and urban planning. The students will not only get inspiration from the studying of historical buildings and modern architectures, but also understand the fundamentals of art design science and urban design, realizing the integration of architectural design and social realities.
Civil Engineering requires the integration of many areas of specialties including the planning, design, construction, operation and maintenance of public infrastructure which are essential to develop better living environments. In addition to the conventional fields above, our Civil Management program maintains a focus on the community through the incorporation of management studies in the fields of tourism, administration and finance, history and culture and the integration of local opinions. We have the Planner Course and Engineer Course which aim to foster engineers with multiple career pathways. Our courses are suitable for both students of the science course and humanities course regardless of gender. While students are expected to follow the comprehensive study program, we place most value on students’ personality and sensibility.

**Planner Course**
This course aims to foster planners who will design the future of urban and suburban landscapes and who can organize the required project to make it happen. Students will learn about social infrastructure, urban development and will study regional tourism resources, disaster prevention, and environmental awareness.

**Engineer Course**
It is necessary to develop many public facilities that we utilise each and every day. Lifelines such as waterworks, sewage systems, electricity and gas supply systems, transportation, and disaster prevention facilities are essential for healthy and enriched society. This course aims to foster engineers who are able to develop and maintain lifelines with high level of skills and high motivation.

Department of Environment and Energy

The place to gain expertise and learn about technologies for realizing sustainable societies by utilizing clean energies

In the Department of Environment and Energy, students will acquire knowledge and study technologies concerning energy-related materials, electric power supply/distribution, the global ecosystem and environmental remediation. Studies will center on renewable energy and the preservation and management of the ecosystem.

The Department has curricula to develop human resources such as energy management engineers serving to promote renewable energy sources for realizing a sustainable society, and human resources specializing in environmental restoration technologies or who possess environmental management skills to achieve the goal of realizing a symbiotic society. Students in the Department will choose either of the following two courses from the second-year:

**Energy Course**
For students with a goal of becoming an energy engineer with a view to helping to protect the environment, such as a specialist of renewable energy

Students in the Energy Course will gain knowledge and techniques and conduct research in areas primarily on renewable energy related themes. They will acquire skills needed to become energy engineers by learning about and by conducting experiments concerning energy materials, measurements/characterization of material properties, analytical technologies etc.

**Ecology Course**
For students with a goal of becoming a specialist to solve environmental issues such as a manager who can lead environmental activities and projects

Students in the Ecology Course will study how to build a society by making the best use of nature. Since students simultaneously learn natural science fundamentals and information technology, they will acquire skills to develop systems for measuring environmental data and for preserving and restoring diverse ecological systems.
Department of Creative Design

The study of design aims to foster wisdom for creating ideas to make our society more comfortable and to give concrete shapes to those ideas so that they can be realized and put to use in our daily life. Demand for graduates with this wisdom and these skills is increasing, not only in the household hardware industry but also in the information and service industries. The Department of Creative Design is educating students to become design experts who can take leadership roles in wide range of business situations.

Students study design processes and techniques in the practice classes. Students can, based on their interests and purposes, choose several assignments from various fields of design as below.

- **Graphic Design:**
  - editorial design, typography, advertising visuals, packages, etc.

- **Web Design:**
  - web site layout, interface icons, html coding, etc.

- **Illustration:**
  - computer graphics, analog illustrations, picture books, etc.

- **Digital Imaging:**
  - CG animation, visual installations, projection mapping, etc.

- **Application Design:**
  - applications for smart phones, game programming, etc.

- **Product Design:**
  - furniture, electrical appliances, vehicles, public transportation, etc.

- **Craft:**
  - dyeing and weaving, ceramics, woodwork, metalwork, etc.

Department of Life Design for Safety and Amenity

The Department of Life Design for Safety and Amenity is an integrated field consisting of human life science, architecture and design. There are 2 main subject groups: Social planning for human lives, works and industries; and housing, interior and environmental design. Both groups encompass a common subject: community and welfare systems. Students will pursue the creation of high quality of life for all. Students will start by observing problems that occur in their everyday lives, then learn to deal with them and solve them by considering better ideas and methods. The goals of this department are to carry out theoretical research and/or design for the environment in order to contribute solutions to current problems faced by people mainly in the Tohoku region.

- **Subject group "S": Social planning for human lives, works and industries**
  - "Social planning for human lives" includes fields of human health, psychology, nursing, welfare and community. On the other hand, "Works and industries with safety and amenity" includes the fields of project planning, social research, regional history, culture and disaster prevention.

- **Subject group "D": Housing, interior and environmental design**
  - "Housing, interior and environmental design" includes fields of design and history of housing, interior and environment with city planning and legal systems. The other part of "housing, interior and environmental science" includes fields of structural safety, energy and ecology.

- **Common Subject Group "C": Community and welfare systems**
  - This group includes welfare living environment, universal design, community systems and so on.
Department of Management and Communication

Students majoring in Management and Communication will learn about the mechanisms involved in business management in the market economy. Due to rapid globalization in recent years, many corporations are crossing borders. This has required them to foster communication skills for international corporate activities. Reflecting these developments and in order to become effective business persons, students will be assisted in improving their communication abilities which include ICT skills and linguistic competence.

The Management and Communication major will carry out theoretical research which deals with specific problems that arise from the current economic situation, as well as study business management practices, and various communication settings. Through the research, students will learn how to work with contemporary issues in areas such as corporate management, accounting, interpersonal communication, intercultural communication and so on.

Management Course
The Management Course will help students to acquire practical knowledge such as management and manufacture systems needed for the business field through the research of regional industries and corporations.

Communication Course
The Communication Course will help students to learn communication theories which explain the reality of our everyday lives. Students will also learn methodologies and acquire communication skills to actively engage with society through various studies such as business communication and media communication.

GRADUATE STUDY

Philosophy and Aims
The philosophy and aims of graduate study are the pursuit of academic theories and their applications, and to contribute to the development of our culture. Our motto "From Creation to Integration, Launched from Sendai" encapsulates these goals. We aim to foster the knowledge which will make our lives rich in terms of both humanity and the environment. We believe that the integration of this knowledge into our society will contribute to the development of local culture and industries. Moreover, we aspire to nurture students who can develop their problem-solving abilities and advanced knowledge so that they may become the leaders of industrial sectors and local communities.

Educational Goals
Graduate School of Engineering
We aim to educate students to be engineers and researchers who are highly skilled and who possess excellent creativity, sophistication and international understanding relevant to science, environmental technology, industry, life, and art. The skills obtained in this program should be used to aid in the creation of sustainable societies, from the Tohoku region to the rest of the world.

Graduate school of Life Design
We aim to educate students to be engineers, designers and researchers who are highly skilled and who possess excellent creativity, sophistication and international understanding. Our students will follow courses which aim to unite science, environmental technology, industry, life, and art. The skills obtained in this program should be used to aid in the creation of sustainable societies and enriched lives and flourishing cultures, from the Tohoku region to the global society.

Curriculum Policy
Graduate School of Engineering / Graduate School of Industrial Design
Master’s Course
The aims of this course are to teach a wide range of advanced knowledge, research abilities and professional skills.

Doctoral Course
The aims of this course are to teach advanced knowledge and to help students to develop research abilities which are required for independent researchers and highly skilled engineers.
I went to graduate school because I wanted to do more advanced research on electronics. The research theme I worked on in graduate school was “Research on gamma ray sensors using compound semiconductors”. I still remember that I had failed the experiments many times and was puzzled over the problems. As a result of repeated efforts and a never give up attitude, I was finally able to get convincing results. Graduate study is like fighting directly with other researchers, all aiming to be the best in the world. The most important thing is to find one’s own way forward and not be afraid of examining new avenues of research. Through my struggles, I was able to experience the essence of academia and expand my world. I am continuing to work towards my dream of becoming leading academics and engineers.

The experience of graduate study makes my dream come true.

My Valuable experience in graduate school

Takuma Watanabe / TAK Co., Ltd.

Ever since I was a high school student, I have been interested in creating human-friendly advanced information systems. After entering university, I was introduced to Professor Miura’s laboratory which specializes in cognitive engineering. After finishing my undergraduate studies, I decided to go to graduate school to pursue my interest there. Our lab is a great environment, featuring a great deal of equipment for conducting experiments, academic books, and wonderful colleagues. All of these things helped me to gain a lot of valuable knowledge and experiences. I studied about the understandability of information based on the mechanism of human associative memory. I believe that my research findings contribute to the advancement of the creation of human-friendly systems. In my study life, the experience of giving a conference presentation is one in which I was able to appreciate my growth as a student and as a researcher. The experiences of sharing enthusiastic discussions with many professors led me to improve my communication skills, which, in turn, gave me confidence. All these experiences throughout my time at Tohoku Institute of Technology will surely be valuable lessons for my future.
Department of Architecture

The Graduate School of Architecture has five divisions in the master's degree program, and four divisions in the doctoral degree program. Architecture is based on the magnificent unity between human science and natural science. Architects have always striven to create architectural designs realizing the connection between society, nature, and living spaces. Our courses are designed to provide students with both professional architectural skills and a strong sense of creativity. In order to obtain a master's degree in the subject, students have the option of writing a thesis or creating and presenting an architectural design.

Architectural History and Design Group
Leader: Assoc. Prof. Yasushi Takeuchi

Architectural Environmental Engineering Group
Leader: Prof. Satoshi Ishii
Research Themes: Renovation of housing / Senior residential housing / Reorganization of Housing in Betwixt Mountains / Arts for Urban Development / Facilities for Senior Residence / Urban Development in Regions with Heavy Snow / Improvement on Environment in Evacuation Shelter and Temporary Evacuation Life

Vibration Control Structure Group
Leader: Prof. Hironori Watanabe

Building Production Technology Group
Leader: Prof. Satoshi Arikawa
Research Themes: Durability of Concrete / Non-masonry building / Management of Building Production

Architectural and Urban Planning and Design Group
Leader: Prof. Songtao Xue
Research Themes: Health Monitoring System on Long Term Use Structure / Vibration Length on Structural Performances of Vibration Controlling System / Development on Various Devices for Damage Control

My souvenir to Peru
Pena Pabel, Ph.D. / ALC-Collegedale, USA

I am from Peru and came to Japan to study Architecture and Environment in 2004. I chose this university because it offered a graduate course that had the elements I was looking for. My research was “The Meaning of Housing in Japan and Peru.” I started my field research by visiting Peruvians and their homes in Japan. What a wonderful experience I had. Now, I am working in the US, but I am planning to move back to my home country one day. I hope I can use the knowledge and experience which I learned in Japan to serve my own country.

Department of Civil Engineering

The Department of Civil Engineering consists of five parts. These parts respectively cover studies to create and utilize the concepts of new spatial environments required for urban areas and national land; studies on various characteristics of hazardous environments and safe environments on and underground; studies on the dynamics and materials of structures for the construction of high-quality infrastructures. We aim at fostering excellent civil engineering and researchers who have an intellectual outlook on general development and environmental protection of national land and urban areas, and who have deep insight and rich scholastic knowledge.

Civil Engineering Materials and Structural Engineering Group
Leader: Prof. Hideo Koide
Research Themes: Direct Tensile Testing of Soften Concrete/ Recycling Low-Rigidity/ Endurance and Maintenance of Steel Structure

Geotechnology Group
Leader: Prof. Noriyuki Chiba
Research Themes: Slope Failure and Possibility of Debris Flow Induced by Earthquake and Heavy Rain / Stability of Foundation from Artificial Reconstruction in Urban Residential Area

Usage of Aquatic Environment and Disaster Prevention Group
Leader: Prof. Toshihiko Takahashi
Research Themes: Usage of Aquatic Environment and Disaster Prevention

Infrastructure Planning Group
Leader: Prof. Akira Kikuchi
Research Themes: Travel Demand Forecasting/ Social Psychology/ Transportation Policy/ Contract provision and risk management for Infrastructure/ Decision making, consensus building, reliability design and performance design for Infrastructure

Water Cycle in Area Group
Leader: Prof. Masatomo Nakayama
Research Themes: Water Cycle in Local Area/ Pollution Loads from non-point Sources/ Behavior of Landfill Leachate Permeating into Soil

Broad view and deep knowledge looking at the world
Masaki Minagawa (Master of Engineering)

My research topic in graduate school is to estimate indirect economic damage caused by the Great East Japan Earthquake using input-output analysis. I quantitatively clarified the impact of the disaster on Japanese industry. In graduate school, I think that I was able to further develop the knowledge I learned as an undergraduate. The most impressive memories of the school days were participating in a summer program at a university in Thailand. It was a valuable experience not only to touch overseas culture but also to make connections with students from all over Japan who participated in the same program. Now, as an employee of the Sendai city government, I am assigned to road business execution management. A broad view and a deep knowledge overlapping the world are required in society, so I feel that the knowledge gained at graduate school and the experience of the short-term study abroad were very useful to me.
The Department of Environmental Information Engineering has three teaching subjects: the study of computer fundamentals and utilization of computers in engineering solutions (Computer Engineering), the study of comprehending, modeling, and solving environmental issues as they relate to engineering projects (Environmental Information Engineering), and the study of techniques for managing and conserving the environment (Environmental Conservation and Strategic Engineering). We aim at developing students who, as a foundation, have systematic knowledge of the above three skills combined, professional research skills and advanced problem solving abilities.

**Energy Engineering Group**
Leader: Prof. Yasuko Maruo
Research Themes: Intelligent Management in Environmental Energy / Storage System of Electric Double Layer Capacitor

**Advanced Environmental Chemical Science Group**
Leader: Prof. Shigenobu Kasai
Research Themes: Exposure and Risk Assessment in Chemical Environment / Biosensor for Environmental Monitoring / Carbon Dioxide Recycling System in Use of Artificial Photosynthesis and Algae / Environmental Materials

**Environmental Science and Management Group**
Leader: Prof. Hironori Koizumi
Research Themes: System Analysis on Environmental Policy / Support for Environmental Study

**Water Resource and Conservation Ecology Group**
Leader: Prof. Kazuhiro Yamada

**Ambient Light Energy System Group**
Leader: Prof. Terunobu Saito

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**I found what I really wanted to do!**
Tomoe Uchida / Mitsubishi Space Software Co., Ltd.

My research was about plant vitality in the Tohoku area using data from the NOAA satellite. My objective as a student was related to the satellite system project which was organized by Prof. Asai. My dream has not changed since then. My current job is analyzing the data from remote sensing systems which is useful to brush up my research ability and technical skills. I was able to find my dream when I was in graduate school. I highly recommend going to graduate school to gain professional knowledge before starting working.

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**GRADUATE SCHOOL OF LIFE DESIGN**

**Department of Industrial Design**

Design engineering is an area of study which truly exemplifies the motto of our college, “From Creation to Integration.” The art of design is based on the close relationship among human sensibility, society, the living environment, and scientific technology. Design, production, and ways of expression all concern the relationships between objects, open spaces and humans, and they should not be studied separately. The interaction among objects and humans, living with nature, and the problems of the regional industrial economy should also be studied based on the unity of various fields of science. Thus, under the principle, “From Creation to Integration,” we aim to equip students with high proficiency in research founded upon rich scholastic knowledge for engaging in professional work in a special field of design engineering or for pursuing research activities as an independent researcher.

**Industrial Design Group**
Leader: Prof. Kiyotaka Morozumi
Research Themes: Practical Design for Improvement on Local Production and Life Style / Design Process of Suitable Tools and System for Human Activity / Reconstruction of Regional Industry by Design / Process and Practice of the Educational-Industrial Complex by Design Marketing / Development of Software Design

**Environmental Design Group**
Leader: Prof. Masahiro Onuma
Research Themes: Restructuring Local Livelihoods and Fostering Diverse Life-scape through Cooperative Ateliers in Rural Communities / Practical Research on Sustainable Living Environmental Design / Preservation and Utilization of Heritage Houses and Townscape / Art Work and Product Development with Natural Dye Technique

**Welfare Design Group**
Leader: Prof. Hajime Harada
Research Themes: Application of Human’s Potential Ability to Product Development / Research for Enhancement of Life Motivation and Quality of Life

**Life Design Science Group**
Leader: Prof. Yuji Koyama
Research Themes: Planning and Evaluation of Heat Circulation of Interior Climate / Space Design and Involved Production Group and Techniques in Japan / Planning of Co-Operative Residence and Community Design

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**High-quality research and knowledge win**
Ryo Sato / M2 Laboratory on Space Design History, Life Design Science Group

Japanese historic and technical wood architecture have attracted me during undergraduate studies and 2 years of actual construction work after graduation. My interests were the technique and the organization of architectural design, construction and repairs in the Sendai Clan from Edo Period to the early years of Meiji Era. In the research, I had a chance to cooperate with local citizens, public workers and other researchers. I am grateful to professors who very kindly supervised me. If you are interested in going to graduate school, it is necessary to develop a strong theme for your research and clear vision of your future. Time flies. It maybe also a good idea to have a specific image of your future after university, and to focus on every single day.
CENTERS AND STUDENT SUPPORT

■ Center of General Education
Center of general education is in charge of liberal arts education including the humanities, social science, languages, gymnastics, and natural science. The center also provides special classes aimed at bridging the gap between high school and the university. Apart from the classes, the center organizes seminars to improve academic ability.

■ e-Learning Center
e-learning center provides support and training for students studying towards approved qualifications as registered real-estate transaction managers, bookkeepers, and so on. The center also provides instructional design services for teachers.

■ International Center of Disaster Engineering
As an institution of higher education in the disaster area, the missions of the center are to train professional engineers for the recovery from the disaster and promote higher education and international research activities. The following are our goals and criteria: 1. Establish cross-curricular and professional courses for urban development against disasters. 2. Accept part-time graduate students and students from overseas. 3. Promote joint research and academic research about disaster engineering. 4. Consult for administrative corporations, local government, and local businesses. 5. Establish flexible research projects.

■ Library
The Yagiyama and Nagamachi campuses each have a library. The library at Yagiyama campus holds specialized books about science and engineering. The Nagamachi campus library holds books about liberal arts, design, life science, and management. Both libraries are open to local residents on Saturdays.

■ Regional Alliance Center
The regional alliance center is designed to help and support local business and people by holding seminars, workshops, and meetings. The center consists of three divisions: regional alliance promotion, human resource training, and support for research and intellectual property.

■ Wellness Center
Wellness center provides access to a wide range of health services including primary medical care, mental health care, and campus-wide health promotion. In the counselling room, clinical psychotherapists provide empathetic care for students all day long.

INTERNATIONAL EXCHANGE

■ Outline
At Tohoku Institute of Technology, we believe that the experience of gaining understanding through interaction with people with different cultures and values can make people happier and their lives more rewarding. To students both in Japan and around the world, this is an important process in an age of increased globalization, and to the faculty members who carry out education and research, experiencing globalization for themselves can aid in their own self-development, education, and research.

With these goals in mind, the Tohoku Institute of Technology considers international exchange programs, through the acceptance of students and faculty members from overseas and through sending its own students and faculty members abroad, to be equally important. Tohoku Institute of Technology continues to make efforts to develop and pursue these goals.

The Tohoku Institute of Technology considers the objectives of its international exchange programs to: 1. Provide opportunities for interaction with a large number of people aiming to achieve engineering and life design studies with a human focus. 2. Be a university offering research and educational programs in fields in demand with international researchers and students. 3. Familiarize students with international sensibilities by having them experience different cultures through interaction with people from other countries.

Universities with academic exchange agreements
(as of 2015)

<table>
<thead>
<tr>
<th>Partner Universities</th>
<th>Country</th>
<th>Date of Agreement</th>
</tr>
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<tbody>
<tr>
<td>Guangzhou University</td>
<td>China</td>
<td>April 22, 2002</td>
</tr>
<tr>
<td>Thai-Nichi Institute of Technology</td>
<td>Thailand</td>
<td>October 24, 2007</td>
</tr>
<tr>
<td>Chung Yuan Christian University</td>
<td>Taiwan</td>
<td>June 8, 2009</td>
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<tr>
<td>Tongji University, College of Foreign Languages</td>
<td>China</td>
<td>March 14, 2012</td>
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<tr>
<td>Korea University, School of Electrical Engineering</td>
<td>Korea</td>
<td>December 3, 2012</td>
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<tr>
<td>Hanoi University of Science and Technology</td>
<td>Vietnam</td>
<td>April 18, 2013</td>
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<tr>
<td>Illinois Institute of Technology</td>
<td>USA</td>
<td>June 13, 2013</td>
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<tr>
<td>Tongji University, College of Civil Engineering</td>
<td>China</td>
<td>August 16, 2013</td>
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<tr>
<td>École Nationale Supérieure d'Architecture Paris -Val de Seine</td>
<td>France</td>
<td>July 1, 2015</td>
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<tr>
<td>Hsuan Chuang University</td>
<td>Taiwan</td>
<td>September 14, 2015</td>
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<tr>
<td>Tongji University, School of Materials Science and Engineering</td>
<td>China</td>
<td>July 27, 2016</td>
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<tr>
<td>Department of Architecture, Faculty of Engineering, Universitas Atma Jaya Yogyakarta</td>
<td>Indonesia</td>
<td>September 23, 2016</td>
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<tr>
<td>Department of Architecture, JangHo Architecture College of Northeastern University</td>
<td>China</td>
<td>September 26, 2016</td>
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</tbody>
</table>

Information for researchers
We welcome any collaboration requests. If researchers wish to collaborate with us, please contact the International Exchange Section, Educational and Student Affairs Section.

For inquiries or to request further information, contact us:
International Exchange Section, Educational and Student Affairs Section
Tel.: +81-22-305-3110  E-mail: gaoffice@tohtech.ac.jp
There are total of 46 clubs and circles encompassing both sports and art. Our gymnasium and club facilities are located in both our campuses. If you join clubs or circles at our university, you will have the chance to meet students from other departments, colleges and universities. It's another way to make great memories of your student life here at the Tohoku Institute of Technology.
VISIT US

■ Location
Both Yagiyama and Nagamachi campuses are located in the hills west of the central part of Sendai. Our two campuses offer convenient access to the heart of the city and are blessed with abundant nature. The Ichiban-cho Lobby (satellite campus) is located in the city center and functions as a place where staff and students can interact with the local community.

■ Access

To Yagiyama campus: Take a city or Miyagi Kotsu bus bound for Yagiyama Minami Danchi, Midorigaoka 3-chome or any other destination in the direction of Yagiyama via Otamaya-bashi and Dobutsu Koen-mae (Yagiyama zoo) from stand 11 or 12 at the bus terminal outside the west exit of Sendai station. Get off at the Tohoku Kodai (Tohoku Institute of Technology) Yagiyama campus stop. It takes about 25 minutes from Sendai station.

Sendai Subway Tozai Line is available from December 2015. It takes about 12 minutes from Sendai station to Yagiyama Dobutsu Koen station. Yagiyama campus is a 10-minute walk from the subway station.

To Nagamachi campus: Take a city bus bound for Yaso-en by way of Atago-ouhashi from stand 11 at the bus terminal outside the west exit of Sendai station and get off at the Mogasaki stop. It takes about 20 minutes from Sendai station.

City buses offer an express service on this route.

To Sendai station: Take the JR Tohoku Shinkansen (bullet train) from Tokyo station. It takes about two hours to Sendai station. City buses offer an express service on this route.

To Sendai airport: There are several direct flights to Sendai airport from overseas including Beijing, Seoul, Shanghai, and Taipei. Domestic flights which connect to nine cities including Narita, Nagoya, and Kansai airports are also available. You can get to Sendai station by the Sendai Airport Line train, airport limousine bus, and taxi. The train is the cheapest (around 630 yen) and convenient (less than 30 min) way to Sendai station.

By Car: Take the Tohoku expressway and exit at the Sendai Miyagi interchange to reach Sendai city.

■ About Sendai

Campus Life in Sendai

Lord Masamune Date laid the foundation of Sendai more than 400 years ago. The Tohoku Institute of Technology is located in Sendai which is the heart of the Tohoku region and a prosperous commercial and academic city. There are many entertainment and cultural facilities such as museums and libraries, and you can enjoy some magnificent scenery within a short distance. Enjoy your university life here in Sendai!

In the center of the city, you can find a number of high-quality restaurants and fashionable department stores. Traditional and contemporary festivals and events take place in every season.

Sendai Mediatheque: A joint facility of Sendai library and art gallery. There are exhibitions all year long. It is one of the centers of the visual arts in Sendai.

Shopping Arcade: Located in the center of the city, there are many designer shops and department stores. This shopping area is always full of locals and tourists alike. The Sendai Tanabata festival can be seen in the arcade in August.

The Miyagi Museum of Art: This museum collects Japanese and overseas artist’s paintings and handcrafts, some of which have a connection with Miyagi prefecture and the Tohoku region. Exhibitions from the permanent collection including the Churyo Sato gallery are occasionally held. The museum also has a garden sculpture collection titled “Alice’s garden.”

Sendai City Museum: Located in the site of the outermost ruins of Sendai castle, about 9000 Date family treasures including Lord Date Masamune’s armor are preserved here. There are special exhibitions and permanent collections on display all year long.

Sendai Station Area: A gate of “Mori-no-Miyako” Sendai. This bustling and attractive station offers easy access to Tokyo and other cities. There are also shopping malls connected to the station.

Jozenji Street: Trees along this street are beautiful in early summer. There are bronze statues along the street, making it just like an open-air art gallery. Jozenji street jazz festival is held here in September.
Honorary chairperson, Dr. Shunichi Iwasaki is not only an authority on electronic engineering and industry but also contributed in a very important way to today’s information technology revolution. He conducted research on high-capacity storage media and invented the metal particle tape which overcame the shortage of the capacity of magnetic tapes and magnetic disks. He proposed the principles of the perpendicular magnetic recording system and established the basic concept of the perpendicular magnetic recording method for the first time. Enhancing the capacity of magnetic tapes and magnetic disks is necessary to meet the demands of today’s information-driven society.

Dr. Iwasaki found that the use of a thinner magnetic layer in the recording media was effective in increasing residual magnetic flux and increasing density of magnetic storage media, because the increased energy product was able to reduce recording losses in short-wave length response. He then developed high density metal tape which was composed of fine iron, cobalt and nickel powders.

Dr. Iwasaki also found that perpendicular magnetic recording was the best way to increase memory capacity. Magnetic recording theory was applied for only longitudinal recording at that time. However, he successfully demonstrated the perpendicular magnetic recording method by introducing CoCr-based perpendicular magnetic films and perpendicular magnetic heads. This new recording method allowed for a ten times higher recording density and caused a transition from a longitudinal to a perpendicular recording system. Smaller and lighter portable hard disc drives produced by his method made it possible to watch movies on a laptop computer and record TV programs using a cell-phone. The spread of perpendicular magnetic disks changed our lives dramatically and created a new culture. The advantages of perpendicular magnetic disk are high density, increased capacity and speed, low cost, and permanent preservation. Many companies use them for the databases of information systems, and they are a vital component in the infrastructure of the Internet and in the management and utilization of global cloud computing-based big data networks. The perpendicular magnetic recording system plays an essential part in today’s sophisticated global information society.