To the frontiers of knowledge

The center of specialized education is shifting from undergraduate to graduate level education as the demand for professionals with a high level of expertise grows.

We are nearing an era where people enter graduate school in order to pursue a field that they are truly interested in.

In response to these changing conditions, Tokai University offers cutting-edge education and research that encompasses a wide range of knowledge and skills through diverse graduate schools and courses that meet the needs of each and every student.

We are committed to nurturing students who will become leaders in their fields and play key roles in shaping the new era.
The System of Learning 02

The Front Lines of Research 05

Introduction to Graduate Schools and Courses 06

Science and Technology 08
Earth and Environmental Science 09
Bioscience 10
Letters 10
Political Science 11
Economics 12
Law 12
Human Environmental Studies 12
Arts 13
Regional Development Studies 13
Science 13
Engineering 14
Design 18
Industrial Engineering 18
High-Technology for Human Welfare 19
Marine Science & Technology 20
Science and Engineering 22
Agriculture 22
Physical Education 23
Medicine 23
Health Sciences 25

Scholarship System and Tuition 26

Career Paths and Employment 27

The Voices of Current Students and Alumni 28

Campus Map 29
The system of learning

Graduate school provides students who wish to continue their studies, the opportunity to conduct research after completing their undergraduate degree. There is a growing demand for people who have a wide range of knowledge and skills as society rapidly changes and becomes increasingly complex by the advance of globalization and information technology. The number of students who wish to attend graduate school will also continue to increase. In response to these conditions, Tokai University established a graduate school system that has 2 professional graduate schools, 21 schools, and 50 courses of study. By exploiting its strength as a comprehensive university, Tokai University has created a highly advanced and diverse space for learning that facilitates interdisciplinary research and learning between schools and courses of study.

Moving from the undergraduate to the graduate level

The graduate school has its foundation in the undergraduate schools, but is an educational and research organization with an independent objective. Thus, it is possible to continue studying the same field that one studied as an undergraduate, or to venture into a new field completely. Just because a student graduates from the School of Engineering, this does not mean that he or she must continue into the Graduate School of Engineering. For example, there are cases where a student who studied mathematics in their undergraduate years entered the Graduate School of Economics to study economic analysis using statistics. This flexibility is enabled by Tokai University’s position as a comprehensive university with 2 professional graduate schools, 21 schools, and 50 courses of study.

The graduate school is comprised of “Courses” that correspond to undergraduate departments and offer master’s programs (the first level of doctoral programs) that have a standard completion time of two years, and doctoral programs (the second level of doctoral programs) that continue for three more years (However, the Advanced Medical Science course at the Graduate School of Medicine only offers a four-year doctoral program). Further, depending on the field of study, only a master’s program may be offered.

The first two years of the doctoral program (the first level) are treated identically to the master’s program. Therefore, the master’s program and the first level of the doctoral program are referred to as the “master’s course,” while the doctoral program including the second level, are referred to as the “doctor’s course.”

Advancement from the master’s course (the first level of doctoral programs) to the doctor’s course (second level of doctoral programs) is not automatic, and students must pass an entrance examination to gain admittance to the latter (except four-year doctoral programs).

In the professional graduate schools that offer training programs to foster the development of specialists in certain fields, the standard completion time is 2 years, but in some fields, the completion time ranges from 1 to 3 years. It is also possible for graduates of the professional graduate schools to advance to the third year of the doctor’s course once they pass the entrance examination.

From Undergraduate School to Graduate School

Tokai University’s doctoral programs in Science and Technology

The Graduate School of Science and Technology, the Graduate School of Earth and Environmental Sciences, and the Graduate School of Biosciences at Tokai University offer only doctoral programs, and each school only offers one course. Each school divides their course into sub-courses that are tailored to the students’ research interests. The courses are offered at the Shonan, Yoyogi, Numazu, Shimizu, Kumamoto, Aso, Sapporo, and Asahikawa campuses. By removing the barriers that are often erected between courses and by promoting cooperation between campuses, we have been able to conduct complex research activities. We promote cutting-edge and global research activities by bringing together a broad range of research fields and people.
It is possible to obtain a master’s degree in less than two years

Tokai University’s graduate schools have a “fast-track” system that allows students to complete a master’s program in less than two years if they have been enrolled for more than one year, and if they possess an “excellent research record.” Just two years after completing their undergraduate studies, they will have a master’s degree in hand, and will be ready to start their careers as experts in their field.

※ The “fast-track” system is recognized by the Graduate School of Letters, Political Science, Economics, Arts, Science, Engineering, High Technology for Human Welfare, and Physical Education. The criteria that constitute an “excellent research record” vary depending on the school.

### Degrees awarded by each graduate school

A master’s degree is awarded after a student earns the required number of credits and passes his or her master’s thesis defense. A doctorate degree is awarded after a student earns the required number of credits and passes his or her doctoral dissertation defense. Two types of doctorates are awarded: research doctorates, which are awarded after the completion of the doctoral program; and dissertation doctorates, which are awarded after the student passes his or her dissertation defense without completing the doctoral program.

### Degrees awarded by Tokai University Graduate Schools

<table>
<thead>
<tr>
<th>Graduate School</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science and Technology</td>
<td>Master of Science, Doctor of Engineering</td>
</tr>
<tr>
<td>Earth and Environmental Sciences</td>
<td>Master of Science, Doctor of Engineering</td>
</tr>
<tr>
<td>Biosciences</td>
<td>Master of Science, Doctor of Agriculture, Doctor of Fisheries Sciences</td>
</tr>
<tr>
<td>Letters</td>
<td>Master of Arts, Doctor of Arts</td>
</tr>
<tr>
<td>Political Science</td>
<td>Master of Political Science, Doctor of Political Science</td>
</tr>
<tr>
<td>Economics</td>
<td>Master of Economics, Doctor of Economics</td>
</tr>
<tr>
<td>Law</td>
<td>Master of Law, Doctor of Law</td>
</tr>
<tr>
<td>Human Environmental Studies</td>
<td>Master of Interdisciplinary Studies</td>
</tr>
<tr>
<td>Arts</td>
<td>Master of Fine Arts</td>
</tr>
<tr>
<td>Regional Development Studies</td>
<td>Master of International Studies</td>
</tr>
<tr>
<td>Science</td>
<td>Master of Science</td>
</tr>
<tr>
<td>Engineering</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>Design</td>
<td>Master of Arts</td>
</tr>
<tr>
<td>Industrial Engineering</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>High-Technology for Human Welfare</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>Marine Science &amp; Technology</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>Ocean Engineering</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>Marine Biology</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>Science and Engineering</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>Electronic and Information Engineering</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>Master of Science</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Master of Agriculture</td>
</tr>
<tr>
<td>Physical Education</td>
<td>Master of Physical Education</td>
</tr>
<tr>
<td>Medicine</td>
<td>Master of Medicine, Ph.D., in Medicine</td>
</tr>
<tr>
<td>Health Sciences</td>
<td>Master of Nursing</td>
</tr>
<tr>
<td>Nursing</td>
<td>Master of Nursing</td>
</tr>
<tr>
<td>Human and Social Work</td>
<td>Master of Health and Social Work</td>
</tr>
<tr>
<td>Law School</td>
<td>Juris doctor</td>
</tr>
<tr>
<td>Embedded Technology</td>
<td>Master of Embedded Technology (Professional)</td>
</tr>
</tbody>
</table>
Teaching licenses offered

Teacher's license (Specialized certificate)

Compared to the first-degree certificate (awarded to a student with a baccalaureate degree or its equivalent) that represents the attainment of a standard level of qualifications and abilities that teachers are expected to possess, the teacher's license offered here represents the attainment of advanced qualifications and abilities - deeper knowledge in a specialized field through advanced studies. In order to obtain the high school or junior high school teacher's license (specialized certificate), the following conditions must be fulfilled:

1. The student must hold a first-degree certificate (or have the credits required for a first-degree certificate).
2. The student must have completed the specialist course offered by the teacher training program. The student must also hold a master's degree or have taken the specialist course offered through the teacher training program for more than one year, and must have earned more than 30 credits.
3. The student must have taken the specialist course offered by the teacher training program and must have earned more than 24 credits in the student's field of specialization.

The path to becoming a Japanese language instructor

The Japanese Literature Course at the Graduate School of Letters (the first level of the doctoral program) offers a Japanese Language Education program during which students complete the Japanese Language Teaching Methods and Japanese Language Teaching Internship classes. Internship students teach first and second levels of Japanese language to non-Japanese students over one semester. The objective of the program is to foster excellent Japanese language instructors.

Affiliated Graduate Schools

Toki University has affiliations with external research institutions. In order to promote research and to improve graduate school education and research activities, students are granted opportunities to pursue education and research both at our schools and at our affiliated research institutions.

Graduate School Admissions

Admissions to the master’s program and the first level of the doctoral program requires an entrance examination that consists of a foreign language test, specialized subject tests, and an oral examination (the material covered varies by graduate school). Applicants for doctoral programs or the second level of the doctoral programs must take a foreign language test and an oral examination. Students may use dictionaries during their foreign language test (However, students taking the Japanese language test may not use dictionaries).

The following items must be submitted in order to apply for admission to Tokai University's graduate schools:

1. Examination fee (35,000 yen)
2. Application forms (with photo)
3. Transcript of the last school attended

Graduate School Admissions
The front lines of research

Tokai University’s graduate schools are unique in their wide range of research activities both in the humanities and the sciences. Many of the research laboratories are engaged in distinctive research activities and aggressively collaborate with private companies. Here, we introduce some of the innovative research activities that our schools are engaged in.

Towards the realization of a cancer treatment without side effects

Graduate School of Engineering
Yamaguchi Research Laboratory

Yamaguchi Research Laboratory at the Graduate School of Engineering (Cellular and Molecular Biology Laboratory) conducts research on the development of molecular-targeted therapies for cancer, the development of a tissue-specific delivery system though the unique characteristics of carbohydrate structure, and analyses of the molecular mechanism of antiproliferative activity of cancer cells. In particular, the tissue-specific delivery system that uses the unique characteristics of carbohydrate structure, which aims at establishing carbohydrate structure-specific single-stranded antibodies, will be applied to medicine and industry because it includes no antigenetic or toxic properties thanks to the use of human antibody genes and is useful as a tool for diagnosis and treatment. This research is certified by the Japan Science and Technology Agency (JST) as a Core Research for Environmental Science and Technology (CREST), and has received external research funds for over five years.

In pursuit of knowledge and technology of the Renaissance period

Graduate School of Letters; Civilization Studies Course
Hirano Research Laboratory

As part of civilization studies, the Hirano Research Laboratory carries out research that focuses on mathematics and science during the Renaissance. The Renaissance is commonly known as the period when the arts flourished. However, many Renaissance artists had knowledge of the modern equivalent of mathematics and science at the foundation of their works of art. The laboratory focuses on research themes such as Leonardo da Vinci and mathematics (in particular, Euclid’s Elements of Ancient Greece); the relationship between the establishment of the law of perspective and ancient optics; and artistic and mathematical studies of beauty and harmony centering on the Canon of Proportion. When necessary, the laboratory also recreates models of tools that were used during that time (refer to the pictures to the left: a 1509 edition of Euclid’s Elements (Pacioli version), which is a rare book owned by Tokai University Library; and a recreated model of Leonardo da Vinci’s compass for drawing parabolas).

In search of environmentally friendly food production technology

Graduate School of Agriculture
Kabata Research Laboratory

The world’s population is increasing; desertification is spreading; the hydrosphere is becoming more polluted and eutrophicated. On the other hand, the area of the world’s arable land is limited. In light of these conditions, researchers are called upon to develop environmentally friendly technology for producing food and crops. Hydro-biomass, the effective use of untapped biological resources, and seed pallets that use sludge are examples of new technologies that have strong potential. What kind of measures must human beings take to coexist with animals in the future? This research laboratory continues to work in search of the answers to this question based on the theme of “producing food and crops based on coexistence and environmental science.”
Introduction to Graduate Schools and Courses

Diverse fields of study that accommodate each student’s research and learning needs

Tokai University is one of the largest universities in Japan, with two professional graduate schools, 21 schools, and 50 courses of study. Tokai University offers an excellent environment for interdisciplinary study because of its status as a comprehensive university. The ten campuses, which are spread out throughout Japan, facilitate education and research that takes advantage of regional and local characteristics. Students will surely find fields of study that they want to pursue amidst the broad range of learning and research opportunities that Tokai University offers.

Graduate School of Science and Technology

Doctoral Degree Program

Course: Science and Technology

Physics and Mathematical Sciences
Information Science and Technology
Electrical and Electronics Engineering
Life Science and Technology
Material Science and Technology
Mechanical Engineering and Aeronautics and Astronautics
Structural Engineering
Marine Science and Technology

Graduate School of Earth and Environmental Sciences

Doctoral Degree Program

Course: Earth and Environmental Science

Earth and Environmental Systems
Earth Observation and Space Systems Engineering

Graduate School of Biosciences

Doctoral Degree Program

Course: Biosciences

Bio-resources Science
Life Science

Graduate School of Letters

Doctoral Degree Program

Course: Civilization Studies
Course: History
Course: Japanese Literature
Japanese Literature
Japanese Language Teaching
Course: English Literature
Course: Communications
Media Studies
Sociology
Clinical Psychology

Graduate School of Political Science

Shonan Campus

Doctoral Degree Program
(First level and second level)

Course: Political Science

Political Science
Local Government Studies
International Politics

Graduate School of Economics

Shonan Campus

Doctoral Degree Program
(First level and second level)

Course: Applied Economics

Graduate School of Law

Shonan Campus

Doctoral Degree Program
(First level and second level)

Course: Advanced Legal Studies

Graduate School of Human Environmental Studies

Shonan Campus

Master’s Degree Program
Course: Human Environmental Studies

Graduate School of Arts

Shonan Campus

Master’s Degree Program

Course: Music
Course: Fine Arts and Design

Graduate School of Regional Development Studies

Sapporo Campus

Master’s Degree Program
Course: Regional Development Studies

Graduate School of Science

Shonan Campus

Master’s Degree Program
Course: Mathematics and Mathematical Sciences
Mathematics
Mathematical Sciences
Course: Physics
Course: Chemistry
Graduate School of Engineering

Shonan Campus

Master’s Degree Program

Course: Information Science and Engineering
Course: Electrical and Electronic System
Course: Computer and Communications
Course: Applied Sciences
Course: Electro Photo Optics
  Electro Photo Optics
  Image Systems Engineering
Course: Industrial Chemistry
Course: Metallurgical Engineering
Course: Architecture and Building Engineering
Course: Civil Engineering
Course: Mechanical Engineering
Course: Aeronautics and Astronautics
Course: Management Engineering

Graduate School: Science and Engineering

Sapporo Campus

Master’s Degree Program

Course: Electronic and Information Engineering
Course: Environmental and Biological Sciences

Graduate School of Agriculture

Aso Campus

Master’s Degree Program

Course: Agricultural Sciences
  Bioresources Science
  Life Science

Graduate School of Physical Education

Shonan Campus

Master’s Degree Program

Course: Physical Education

Graduate School of Design

Asahikawa Campus

Master’s Degree Program

Course: Integrated Design Studies

Industrial Engineering

Kumamoto Campus

Master’s Degree Program

Course: Production Engineering
Course: Information Engineering
Course: Architecture and Civil Engineering

Graduate School of High-Technology for Human Welfare

Numazu Campus

Master’s Degree Program

Course: Information and Communication Technology
Course: Material Science and Technology
Course: Biological Science and Technology
Course: Bio-Medical Engineering

Graduate School of Marine Science & Technology

Shimizu Campus

Master’s Degree Program

Course: Ocean Engineering
Course: Fisheries Science
Course: Marine Science
Course: Marine Bioscience

Graduate School of Medicine

Isehara Campus

Master’s and Doctoral Degree Programs

Course: Advanced Medical Science
  (Doctoral Degree Program)
  (Development of Global Health Leaders Based on Health Forecasting)
Course: Medical Science
  (Master’s Degree Program)

Graduate School of Health Sciences

Isehara Campus

Master’s Degree Program

Course: Nursing
Course: Health and Social Work

Professional Graduate School

Law School

Yoyogi Campus

Juris Doctor Course

School of Embedded Technology

Takanawa Campus

Embedded Technology Course
Course: Science and Technology

The perfect research environment for world leaders.

Centering on biology, information technology, environmental engineering, and materials, the Science and Technology Course has become increasingly interdisciplinary each year. This is in response to the need for an educational and research environment that removes the existing boundaries between academic disciplines in order to realize highly innovative education and research activities that can contribute to international academic communities. The Graduate School of Science and Technology offers just one course: the Science and Technology Course, which is free of interdisciplinary boundaries. The course is divided into eight sub-courses that cover a wide range of academic fields based in science, engineering, development engineering, and marine science. By combining these fields to create an interdisciplinary environment, the Graduate School of Science and Technology strives to promote the highest quality academic research and to foster world-class researchers.

Faculty | Areas of specialization (Research topics)
---|---

### Physical and Mathematical Studies

- **Jin Akiyama**
  - Discrete Geometry, Combinatorial Geometry, Graph theory, Mathematical Education, Development of Mathematical teaching materials
- **Takashi Iwashita**
  - Phase Transition on Spin System
- **Keisuke Uchimura**
  - Complex Dynamical Systems
- **Masami Ohta**
  - Number Theory
- **Kenju Otsuka**
  - Nonlinear Laser Science, Quantum Optics, Laser Metrology.
- **Minoru Tanaka**
  - Differential Geometry
- **Morimasa Tsuchiya**
  - Poset Theoretical Graph Theory
- **Akira Tonegawa**
  - Basic research of Plasma Physics and application for Nuclear Fusion, Space, and Processing
- **Tadashi Toyoda**
  - Quantum theory of superconductor, superfluid, and laser
- **Hidetoshi Douke**
  - Computational statistics
- **Kenzo Narri**
  - Laser physics
- **Kyoji Nishijima**
  - High Energy Astrophysics
- **Masahide Takada-Hidai**
  - Chemical evolution of the Galaxy; formation and evolution of extrasolar planets
- **Tsuneyo Furuyama**
  - Software measurement technology
- **Bentz Wolfgang**
  - Hadronic Physics
- **Kuniaki Horie**
  - Study of algebraic number fields related to Iwasawa theory
- **Tokio Matsuyama**
  - The dispersive estimates and Strichartz type estimates for the hyperbolic equations. Especially, the asymptotics for Kirchhoff equation.
- **Osamu Mitani**
  - Plasma Fusion Reactor(Magnetic Confinement)
- **Shin Yagihara**
  - Broadband dielectric spectroscopy of molecular complex materials and biological systems
- **Masaki Yasue**
  - New theory of massive neutrinos and baryogenesis due to neutrinos in the universe
- **Shigen Yamauchi**
  - Laser Spectroscopy
- **Masaya Yamauchi**
  - Nonlinear partial differential equations and dynamical systems
- **Junzo Watanabe**
  - Artinian Algebras and Schur-Weyl duality
- **Masanori Endo**
  - COIL, Optical resonators, Wave optics
- **Naoki Shinyaishi**
  - Dynamics of Molecules in Soft Condensed Matter
- **Kazuyoshi Tani**
  - Laser Photonics, Nonlinear optics

### Information Science and Technology

- **Yan Shi**
- **Ryutaro Kikumura**
  - Neural Networks
- **Yasuhiro Okumori**
  - Electronic Paper, Imaging technology
- **Nobuo Iwaki**
  - Information Security
- **Shigeyuki Kudo**
  - Image Compression, Digital Watermarking
- **Takao Xuehou**
  - Computational Geometry, Algorithms and data structure
Course: Earth and Environmental Science

Fostering researchers who can contribute to improving the global environment and human society in the new era.

In the history of life on earth spanning 3.8 billion years, human beings have upset the earth’s ecosystem in a very short time, as seen with the global warming and the energy crisis. The enjoyment of mass-production, mass-consumption and mass-disposal promoted by the development of science and technology handed down from previous centuries, are the main culprits of these global crisis. Therefore, it is our mission to establish new earth environment sciences such as earth ecosystem science, biology and earth observation science by combining the knowledge and technology of existing science, engineering, agriculture, and fisheries oceanography in order to maintain the safety and sustainability of human beings for future generations. The Graduate School of Earth and Environmental Science promotes international, interdisciplinary and cutting-edge academic research based on this broad perspective. It also aims at fostering highly analytical and creative researchers who can contribute to the improvement in the global environment and human society in the 21st century.

Faculty

Areas of specialization (Research topics)

<table>
<thead>
<tr>
<th>Course: Earth and Environmental Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth and Environmental Systems</td>
</tr>
<tr>
<td>Jun Awaka</td>
</tr>
<tr>
<td>Yoshimi Ishihara</td>
</tr>
<tr>
<td>Takashi Iizumi</td>
</tr>
<tr>
<td>Kunio Kutsuwada</td>
</tr>
<tr>
<td>Masahisa Kubota</td>
</tr>
<tr>
<td>Tsutomu Kokawa</td>
</tr>
<tr>
<td>Tetsuo Shimono</td>
</tr>
<tr>
<td>Yuichi Takeuchi</td>
</tr>
<tr>
<td>Kisaburo Nakata</td>
</tr>
<tr>
<td>Hiroshi Hattori</td>
</tr>
<tr>
<td>Yoshika Sekine</td>
</tr>
<tr>
<td>Hisashi Narita</td>
</tr>
</tbody>
</table>

Earth Observation and Space Systems Engineering

| Yosihiko Okada | Satellite monitoring of marine environment |
| Haruhisa Shimoda | Remote sensing data analysis |
| Kohji Cho | Wide coverage monitoring by satellite remote sensing |
| Yutaka Tonegawa | Solar terrestrial physics, Magnetospheric physics |
| Toshiyasu Nagao | Earthquake prediction. Development of technology to monitor the Earth’s deep interior |
| Hajime Fukushima | Satellite Monitoring of Atmospheric Environment |
Course: Bioscience

Interdisciplinary High-level Biology Research.

These days, engineering innovation in the field of biological production has been dramatically promoted because the development of bioscience reveals many extraordinary characteristics and functions of organisms. The Graduate School of Bioscience embraces a wide variety of researchers who conduct research on virtually all types of organisms using diverse research methods at the molecular, individual, and population levels. The course is divided into two sub-courses: Biosource Science, which deals mainly with applied biology such as production; and Life Science, which promotes basic research on life mechanisms. This sub-course system allows the smooth exchange of information and the realization of collaborative research. The school carries out interdisciplinary high-level research by cooperating with the Biological Science and Technology sub-course at the Graduate School of Science and Technology and the Graduate School of Earth and Environmental Science.

Faculty Areas of specialization (Research topics)

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koji Iwazawa</td>
<td>Identification of functional ingredients in fermented dairy products (cheese) and its formation mechanism</td>
</tr>
<tr>
<td>Kunio Koga</td>
<td>Functional interactions between food ingredients and organism</td>
</tr>
<tr>
<td>Haruki Komatsu</td>
<td>Physiological and ecological research on breeding and reproductive growth in fruit trees</td>
</tr>
<tr>
<td>Fukusho Koyanagi</td>
<td>Physiological study on the early development of mammals</td>
</tr>
<tr>
<td>Nobuhiko Suzuki</td>
<td>Morphogenesis and adaptive evolution in fishes</td>
</tr>
<tr>
<td>Shinshaku Takayama</td>
<td>Mass propagation and large scale culture of plants</td>
</tr>
<tr>
<td>Sho Tanaka</td>
<td>Biological and ecological research of marine apex predators</td>
</tr>
<tr>
<td>Hiroyuki Nishihara</td>
<td>Studies on Food Functional chemistry and Chemical Ecology of Edible Plants</td>
</tr>
</tbody>
</table>

Course: Civilization Studies

The Civilization Studies Course studies civilization from a wider viewpoint without being constrained by academic boundaries.

As areas of research, the Civilization Studies Course introduces various topics from many disciplines such as philosophy, culture, language, art, religion, anthropology, sociology, and history as well as the methods and theories of civilization studies. Although these disciplines are highly specialized areas, this course focuses on promoting interdisciplinary discussion by introducing new areas for research and the opinions of each discipline. Through this kind of research education, the school fosters researchers who can maximize their potential and hold a wider perspective as members of modern society while enjoying highly specialized abilities and knowledge.

Faculty Areas of specialization (Research topics)

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masayuki Usuda</td>
<td>Modern history of India</td>
</tr>
<tr>
<td>Takashi Uehara</td>
<td>Medieval history in Arab countries</td>
</tr>
<tr>
<td>Yasuhiro Katagiri</td>
<td>History and politics of United States of America</td>
</tr>
<tr>
<td>Tadatoshi Kubota</td>
<td>European classical literature</td>
</tr>
<tr>
<td>Yuichiro Tajiri</td>
<td>Japanese history of ideas</td>
</tr>
<tr>
<td>Hisashi Nakagawa</td>
<td>European modern thought</td>
</tr>
<tr>
<td>Yoshinori Harada</td>
<td>Human geography</td>
</tr>
<tr>
<td>Yoichi Hirano</td>
<td>History of science and mathematics</td>
</tr>
<tr>
<td>Ryozo Matsuura</td>
<td>Anthropology, prehistory of Latin America</td>
</tr>
<tr>
<td>Makoto Yoshino</td>
<td>East Asian civilization</td>
</tr>
<tr>
<td>J. N. Rostinsky</td>
<td>Static literature, semantics</td>
</tr>
</tbody>
</table>

Course: History

The History Course pursues the study of integrated human history through a wide variety of research objects.

The History Course comprises four fields: Japanese History, Oriental History, Occidental History and Archeology. By adding Archeology to the traditional three fields of document-based history, the course presents an opportunity to pursue an integrated form of human history. The course introduces a wide range of research topics, for example, the history of diplomacy in Japanese History; agricultural history in China and the history of Central Asia in Oriental History; Mediterranean history in Occidental History; and foreign archeology in Archeology. In addition, the course promotes cooperation between the four fields as well as interdisciplinary communication with the faculty and students of other courses and schools in order to fulfill its mission of developing researchers who can think globally and creatively.
The System of Learning

Course: Japanese Literature

The Japanese Literature Course aims to produce researchers of Japanese literature, Japanese language, and practitioners of Japanese language education.

The Japanese Literature Course consists of two sub-courses: Japanese Literature and Japanese Language Education. The Japanese Literature sub-course aims at fostering researchers and educators of the next generation and persons of culture who can play important and leading roles by training students to master basic and advanced levels of research competency in Japanese literature and Japanese language. The objective of the Japanese Language Education sub-course is to teach the theories and methods of Japanese language education targeting non-Japanese. In the internship class, students teach Japanese language to international students who attend Japanese language course at Tokai University. By connecting academic learning with practical on-site training, this sub-course aims at fostering excellent practitioners and researchers of Japanese language education.

Course: English Literature

The English Literature Course aims to produce specialists of the English language, and English and American literature and excellent English language educators.

The mission of the English Literature Course is to foster specialists of English language and English and American literature who have a wide range of knowledge built on English and American literature and the English language. The English and American Literature sub-course deals with various genres of literature from the era when the Anglo-Saxons settled in Great Britain to modern times. The English Language sub-course carries out systematic research on the English language, regarding it not only as a native language of the Anglo-Saxons but also as the universal language. At the same time, the English Language sub-course offers theoretical and practical training in the fields of English language education, communication, applied linguistics, and cognitive linguistics to foster researchers who can contribute to English language education.

Course: Communications

Connecting three disciplines: media studies; sociology; and clinical psychology for advanced studies.

The Communications Course covers three disciplines: media studies; sociology; and clinical psychology. By connecting these three disciplines in a systematic way, the course aims to foster communications specialists and at improving education and research activities to train researchers. The mission of the Media Study sub-course is to foster specialists who can pay special attention to the functions and achievements of the media in terms of communications. The mission of the Sociology sub-course is to foster specialists who can pay special attention to the problems in society, the meeting place of communicators. The mission of the Clinical Psychology sub-course is to foster specialists who can pay special attention to the psychological mechanisms of communicators.

Course: Political Science

The pursuit of innovative theories through traditional knowledge and cutting-edge analytical methods.

The Political Science Course comprises three sub-courses: the Politics, International Politics, Local Administration courses. Political science plays a more and more important role in the modern era when domestic and international communities go to two extremes, unification/diversification and centralization/decentralization. Based on the traditional knowledge and theories that every field of social science has accumulated, the Graduate School of Political Science has made a constant effort to establish innovative theories through the introduction of the latest analytical methods such as behavioural techniques. Our mission is to foster researchers who can analyze complex political behavior and phenomena with an interdisciplinary vision acquired through our education and research and who have strong leadership qualities together with good judgment and intellectual productivity.
Course: Applied Economics

Aimed at fostering personnel who will master practical applied economics and establish careers as leaders.

Based on historical and important research on economics and business science, the Applied Economics Course offers a variety of lectures and practical seminars starting from the introduction of the basic theories and research methods of economics and business science. In each specialized area, where individual tutorials are fully implemented, professors and students engage in high-level research with the use of their creativity. Our mission is to foster personnel who, through the mastering of practical applied economics, are able to contribute to the design and management of policies in the political arena or who can passionately strive to develop new businesses, improve sales management and quality management, or engage in organizational development in the private sector.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katsutoshi Ayano</td>
<td>Quality Management, International Quality Management, (Basic Field of Study: Management)</td>
</tr>
<tr>
<td>Hinryuki Kawanobe</td>
<td>Economic Policy, Public Selection (Basic Field of Study: Economics)</td>
</tr>
<tr>
<td>Tosho Kosaki</td>
<td>Labor Economics, Labor Market Theory, (Basic Field of Study: Economics)</td>
</tr>
<tr>
<td>Akira Konakayama</td>
<td>Informational Economics, Institutional Economics, (Basic Field of Study: Economics)</td>
</tr>
<tr>
<td>Itta Kobayashi</td>
<td>Industry Policy, Distribution Policy, (Basic Field of Study: Economics)</td>
</tr>
<tr>
<td>Kazutoshi Shima</td>
<td>Financial Economics, Financial Policy (Basic Field of Study: Economics)</td>
</tr>
<tr>
<td>Toyoshi Ninomiya</td>
<td>Administration, Administration Organization (Basic Field of Study: Management)</td>
</tr>
<tr>
<td>Hiroshi Yanemura</td>
<td>Financial Affairs Management, Finance Market Theory (Basic Field of Study: Management)</td>
</tr>
<tr>
<td>Kiyohiko Asano</td>
<td>Marketing, Marketing Management, (Basic Field of Study: Management)</td>
</tr>
<tr>
<td>Masaki Iwataki</td>
<td>International Management Theory, Management Strategy Theory (Basic Field of Study: Management)</td>
</tr>
<tr>
<td>Toyokazu Ono</td>
<td>Personnel Development, Enterprise Society Theory, (Basic Field of Study: Management)</td>
</tr>
<tr>
<td>Eiichiro Yagi</td>
<td>Decision Making Theory, Operational Management (Basic Field of Study: Management)</td>
</tr>
</tbody>
</table>

Course: Advanced Legal Studies

A curriculum for high-level specialists who can respond to a wide range of needs.

The objective of the Graduate School of Law is to provide opportunities to study law for those who want to be researchers or lawyers and other law specialists as well as for working people or international students. In accord with this mission, the school has developed a curriculum that offers a wide range and variety of specialist law subjects covering vast areas of law while meeting the expectations of higher-level specialists. In the first level of the doctoral program, the opportunity to take undergraduate classes in specialist law subjects is provided for those who do not attend an undergraduate law school to provide an opportunity to effectively learn the advanced levels of law.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiyohiko Ishida</td>
<td>Commercial Law</td>
</tr>
<tr>
<td>Tetsuo Ito</td>
<td>International Law</td>
</tr>
</tbody>
</table>

Course: Human Environmental Studies

Examining the human environment from a wider viewpoint to promote a society where humans and the environment co-exist harmoniously.

The educational creed of the Graduate School of Human Environmental Studies is to, “Reexamine our lifestyles and rediscover the true quality of an affluent life to create a society characterized by co-existence.” Based on this idea, the school promotes practical education and research activities that focus on cooperation with local communities, standing on interdisciplinary viewpoints that transcend the boundaries between humanities, social science and science. Also, the school aims at fostering researchers who can examine the human environment from a wider viewpoint and take action to create a society characterized by co-existence. The distinctive characteristic of the Human Environmental Studies Course is an education system that combines theoretical study with practical studies and dissertation seminars. The course comprises five study fields: basic study of a co-existence society, symbiosis, human co-existence, environmental education and practical seminars.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haruhisa Uchida</td>
<td>Material Science, Environmental Education</td>
</tr>
<tr>
<td>Yoshio Inoue</td>
<td>Environment and Natural Resource Science, Theory of Social Chemistry</td>
</tr>
<tr>
<td>Fujio Suda</td>
<td>Environmental Energy, Energy Conversion ・ Use</td>
</tr>
<tr>
<td>Satou Katsuda</td>
<td>Environmental Law, Environmental Policy</td>
</tr>
<tr>
<td>Morihiko Kinjo</td>
<td>Quantity Environmental Analysis, Environmental Economics</td>
</tr>
</tbody>
</table>
The System of Learning

Graduate School of Arts

The pursuit of theories and practical studies of arts from a wider standpoint of views while maximizing the benefits of an integrated university.

The Graduate School of Arts, comprising the Music Course and the Fine Arts and Design Course, offers academic training as well as practical skill training to foster high-level specialists in many fields of arts. As a member of an integrated university, both courses adopt interdisciplinary research approaches and embrace a wider viewpoint to introduce contemporary research topics such as arts and design in a society equipped with sophisticated technology and information systems, environmental issues and art management, and art therapies. Especially, the Integrated Research on Arts, a mandatory class of the school, and the Research Report Session, which takes place twice a year in spring and fall, are known as unique subjects shared by the both courses.

Course: Music

Foster researchers, educators, and performers with high-level expertise through thorough personal tutorials

The mission of the Music Course is to foster researchers, educators and performers who not only have a high level of expertise but also can appreciate artistic activities from a wider viewpoint in everyday life. Centering on the three courses, namely, Music, Performance, and Advanced Music and Performance, the curriculum offers a variety of specialist electives in areas related to music, applied music, performance and creation. Students are recommended to present the results of their study outside the school as often as possible. These activities include giving presentations at academic conferences, entering music competitions and appearing in concerts.

Fine Arts and Design

Foster new-fashioned specialists who become leaders in the field of art.

The Fine Arts and Design Course is divided into fine art sub-courses and the design sub-course. The curricula of both sub-courses roughly comprise practical seminars that focus on the creation of artworks and academic lectures mainly on fine art and design. In addition to specialized subjects in both sub-courses, the curriculum also offers many special lectures on art creation that are shared by both sub-courses so that students can actively engage in research on subjects that stand on the boundary between fine art and design. The mission of this course is to foster not only artists who can impress people with their aesthetic impact but also new-fashioned specialists such as researchers, leaders of cultural promotion, and educators who can play a leading role in a wide range of fields in the modern world.

Graduate School of Regional Development Studies

Course: Regional Development Studies

Conduct high-level research based on the keywords, “globalization,” “localization,” and “informatization.”

The international community sees the development of globalization and disappearance of borders while local communities face demographic problems such as overpopulation in capital cities, the exodus from rural areas, the declining population of children, and the aging society. Various problems have occurred against the backdrop of these trends. The Regional Development Studies Course offers specialized education about and research into these issues. Aiming at establishing communication networks in local communities, we employ practical and highly systematized research approaches—for example, we have introduced an information network as a communication medium between locals. Centering around research on international and local communities and on community media, we strive to foster personnel with international sensibilities and expertise in local communities, who, having a good command of a foreign language, can have a strong influence in the international community while giving good advice to local communities.

Graduate School of Science

Foster researchers and educators who support the base of Japan’s science and technology.

Although science and technology was originally classified as different genres, they are treated as an inseparable unit, science and technology studies, in the modern world. Focusing on research and education activities, the Graduate School of Science envisions that we engage in applied science while supporting the base of advanced scientific research. Based on the two main regions of science, theoretical science and experimental science, the school tries to present balanced education and research. The Graduate School of Science comprises three courses: the Mathematical Science Course, the Physics Course and the Chemistry Course. The objective of the school is to educate students of the master’s program so that they can have a wider vision. The school also helps students who want to pursue higher education in a doctoral program prepare for advanced scientific endeavors. Of course, all courses have curricula that respond to the needs of students who want to be teachers.

Course: Mathematics and Mathematical Sciences

Establish a higher level of expertise in mathematics and information science based on a broad perspective.

The Mathematical Sciences Course, the higher-level course of the Mathematics and Mathematical Sciences majors at the Science Department (undergraduate), conducts research into various topics in the mathematical science field while maintaining a good relationship with undergraduate courses. The course is divided into two sub-courses: the Mathematics sub-course, where students study algebra, geometry, mathematical analysis, statistics and probability, dynamics, computer mathematics, etc.; and the Mathematical Sciences sub-course, where students study graph theory, the foundation of mathematics, computer statistics, etc. In every field, students (in the master’s program) are expected to learn basic information concerning specialized subjects and the quintessence of research and master analytical methods for original research. Staffed by specialists in both the Mathematics and Mathematical Sciences sub-courses, the Mathematical Sciences Course covers a wide range of fields from pure mathematics to applied mathematics and to information processing.
Course: Mathematics

The areas of specialization include Linear partial differential equation, Complex Dynamical Systems, Number Theory, Differential Geometry, Stochastic Processes, Topology, Functional equations (nonlinear partial differential equations), Number theory, The dispersive estimates and Strichartz type estimates for the nonlinear partial differential equations, etc.

Faculty
- Toyohiro Akamatsu
- Keisuke Uchimura
- Masami Ohta
- Minoru Tanaka
- Makoto Doi
- Teruo Naga
- Takashi Narazaki
- Kuniaki Horie
- Tokio Matsuyama
- Masaru Yamaguchi
- Junzo Watanabe
- Akiko Maeda
- Yoichi Shima
- Yoshihiko Yamamoto

Course: Physics

Understanding the basis of physical phenomena.

The research fields of the Physics Course comprises topics in theoretical physics, which include superconductivity, superfluidity, unified field theory, particle physics, and high-energy physics, and topics in experimental physics that include high-energy space physics, astronomical spectroscopy, complex physics concerning life and molecules, laser plasma and electromagnetic energy. Through research into various topics, ranging from the microstructure of substances to the essential facts of life, and to light energy, the technology that is expected to be a core technology in the 21st century, students are expected to acquire the ability to voluntarily examine, learn and create. The mission of the Physics Course is to foster researchers who can create new advanced technologies for the 21st century based on thorough understanding of the basics of physical phenomena.

Faculty
- Jin Akiyama
- Masanori Itai
- Takeshi Ooya
- Akira Koriyama
- Kiyoushi Shirayama
- Morimasa Tsuchiya
- Hideyuki Douke
- Hiroshi Naushima
- Tsuneo Furuya
- Masao Hara
- Yasuhiro Matsui

Course: Chemistry

Research systems that respond to various needs in chemistry.

The Chemistry Course offers programs that can respond to the needs of various fields from basic to applied chemistry, staffed by lecturers who undertake research in a variety of specialties in the four major fields (physical chemistry, inorganic chemistry, organic chemistry, analytical chemistry) to their applied fields (computational chemistry, environmental chemistry, life organic chemistry, biochemistry and material chemistry). In addition, specialized subjects in chemistry education are available to students who want to be high school teachers with high levels of expertise. It is recommended that all students study not only specialized subjects, but engage in studies across disciplines so that they become specialists who have thorough understandings of ethics, history and the world.

Faculty
- Kazumi Fujita
- Yasuyuki Miura
- Mikio Watanabe
- Yoshihiko Ishihara
- Shigenori Ishikawa
- Michio Iwamoto
- Yoshika Sekine

Course: Information Science and Engineering

Integrated training in the foundations of information science and element technologies.

The basic science concerning information, which include interdisciplinary studies, information science, which centers on computer science education and research, and information media engineering, which aims at the development and application of element technologies for the hardware and software of information media, are very important fields that form the foundation of information science and technology. The Information Science and Engineering Course offers a curriculum that allows students to study these three fields systematically from the basic to highly advanced levels. The mission of the school is to foster researchers who can contribute to society, equipped with appropriate levels of ethics and responsibility based on the comprehensive knowledge that they have acquired concerning the basic science of information and element technologies for hardware and through the varied application of their expertise.
Course: Computer and Communications

The mastering of the basic knowledge and applied skills in "control" and "communications"

Control system technology includes various computer control devices and aims at applying technology to human information systems, while information and communication technology mainly comprises computer circuits and networks. These two areas are very important fields that form the foundation of electronics and information technology. The course, which combines these two technologies, aims at fostering engineers who work at the forefront of information-related fields including computers and peripheral devices. The curriculum covers various subjects in basic areas, fields that relate to computers and information, fields related to control systems and fields related to information and communication.

Students are expected to acquire ample basic knowledge and apply the skills they have learned so that they can respond to new technological innovations.

Course: Electrical and Electronic System

A curriculum that combines a traditional knowledge of electrical and electronic engineering with innovative technology.

The curriculum of this course comprises research seminars and academic lectures in four categories—energy, circuits, control, and information, electrical properties, and a combined field. In other words, the curriculum embraces both the tradition of electrical and electronic engineering and innovative study fields that are in demand in modern society. The course focuses on fostering students who have a profound understanding of specialized subjects as well as an understanding of other disciplines, a high level of creativity, and international sensibilities. Students are expected to become specialist engineers or researchers who can play a leading role and contribute to society as core members in fields such as electrical power, total electric appliances, semiconductor, information technology and communication technology.

Course: Applied Sciences

Pursue the next generation of energy, centering on nuclear energy and new energies.

The Applied Sciences Course was the first graduate course in Japan to introduce the nuclear energy sub-course. Since that time, it has conducted research into nuclear engineering. In addition, the course embarked on application research that promoted the active use of alternative energy resources such as hydrogen energy and solar energy. The course presents a unique educational environment, where various types of energy resources are examined through a curriculum comprising nuclear engineering, which deals with quantum engineering and safety engineering, and material engineering, which deals with new energy resources other than nuclear energy. Represented by the three keywords, energy, materials, and material engineering, which deals with new energy resources other than nuclear energy. Represented by the three keywords, energy, materials, and material engineering, which deals with new energy resources other than nuclear energy. Represented by the three keywords, energy, materials, and material engineering, which deals with new energy resources other than nuclear energy. Represented by the three keywords, energy, materials, and material engineering, which deals with new energy resources other than nuclear energy. Represented by the three keywords, energy, materials, and material engineering, which deals with new energy resources other than nuclear energy. Represented by the three keywords, energy, materials, and material engineering, which deals with new energy resources other than nuclear energy.

The System of Learning

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haruo Shindo</td>
<td>Plasma Nano-technologies for Device Processes</td>
</tr>
<tr>
<td>Takashi Inubashri</td>
<td>Solid State Electronics</td>
</tr>
<tr>
<td>Ryuichi Ohya</td>
<td>Applied Engineering Electrostatics and Electrical Discharges</td>
</tr>
<tr>
<td>Kunio Okimura</td>
<td>Characterization of structural and electronic properties of transition metal oxide material</td>
</tr>
<tr>
<td>Masao Kando</td>
<td>High Voltage Engineering &amp; Electrical Power Engineering. The followings are under investigation: Lightning protection, Lightning Networks in Asia Countries, Partial Discharge, Surge phenomena, Breakdown phenomena in small gaps and PCB, Nanosecond Pulse Generator using Power Devices</td>
</tr>
<tr>
<td>Hideki Kimura</td>
<td>Energy Conversion, Energy Storage, Electric Vehicle</td>
</tr>
<tr>
<td>Tatsuki Kurusu</td>
<td>Semiconductor Devices</td>
</tr>
<tr>
<td>Kiyotaka Kobayashi</td>
<td>Electronic device engineering</td>
</tr>
<tr>
<td>Yoshimitu Matsuura</td>
<td>Electric power systems engineering</td>
</tr>
<tr>
<td>Hidenori Aoki</td>
<td>Electric power systems engineering</td>
</tr>
<tr>
<td>Masao Isomura</td>
<td>Solar cell technology</td>
</tr>
<tr>
<td>Takashi Inubashri</td>
<td>Solid State Electronics</td>
</tr>
<tr>
<td>Ryuichi Ohya</td>
<td>Applied Engineering Electrostatics and Electrical Discharges</td>
</tr>
<tr>
<td>Kunio Okimura</td>
<td>Characterization of structural and electronic properties of transition metal oxide material</td>
</tr>
<tr>
<td>Masao Kando</td>
<td>High Voltage Engineering &amp; Electrical Power Engineering. The followings are under investigation: Lightning protection, Lightning Networks in Asia Countries, Partial Discharge, Surge phenomena, Breakdown phenomena in small gaps and PCB, Nanosecond Pulse Generator using Power Devices</td>
</tr>
<tr>
<td>Hideki Kimura</td>
<td>Energy Conversion, Energy Storage, Electric Vehicle</td>
</tr>
<tr>
<td>Tatsuki Kurusu</td>
<td>Semiconductor Devices</td>
</tr>
<tr>
<td>Kiyotaka Kobayashi</td>
<td>Electronic device engineering</td>
</tr>
<tr>
<td>Yoshimitu Matsuura</td>
<td>Electric power systems engineering</td>
</tr>
</tbody>
</table>

Information of the faculty as of 2007
Course: Electro Photo Optics

Light and images—the pursuit of rapidly evolving science and technology.

The Electro Photo Optics Course comprises the Electro Photo Optics sub-course and Image Systems Engineering sub-course. Students enrolled in one course are free to take classes in the other. Although students can complete the course by taking classes only in one sub-course, it is advisable for students to take classes in both sub-courses to acquire a wider range of knowledge. Science and technology concerning light has developed as a prerequisite for high technology such as advanced information systems, nanotechnology and biotechnology. Image processing technology has been rapidly applied to a wide range of fields as computer technology has developed. Under the philosophy that leading-edge research is built on basic theories and research, the Electro Photo Optics Course engages in education and research activities that focus on the acquisition of basic levels of knowledge.

Course: Metallurgical Engineering

Aspire to be a specialist in materials engineering, with a broader perspective of the world and its history.

Covering almost all materials, such as metallic yarn, ceramics and complex materials, the Metallurgical Engineering Course fosters engineers who can deal with many problems concerning materials. The curriculum includes lectures that cover the basic to advanced levels of material engineering, with some lectures being delivered in English, the prerequisite language for international researchers, together with materials and material processing research seminars. In addition, we offer programs that help students acquire international awareness including communication skills by allowing them to attend international conferences held in foreign countries and encouraging them to report their research there. We focus not only on the training of knowledge and skills but also on the study of the world and its history with a broader perspective.

Course: Architecture and Building Engineering

Education and research training based on a solid architectural philosophy.

Design, structure, material and construction, and environment and facility are the four fields of our research activities. Since the inauguration of its master’s program in 1964, the Architecture and Building Engineering Course has offered education and research training based on an unyielding architectural philosophy and has introduced personnel who can contribute to society from many fields of architecture. Recently, architectural design and construction technology has become more advanced, versatile and interdisciplinary. Especially, contemporaries need architecture that is environmentally friendly, safe and economical. We focus not only on the development of expertise as a specialist, and design and research competency, but also on the personal growth of students as humanists. Against this backdrop of the imminent danger of environmental destruction on a global level, the Architecture and Building Engineering Course aims at fostering personnel who are gifted with creativity and who have the right perspective on history and the world without worshipping technology.
Course: Civil Engineering

A discipline that deals with the construction and maintenance of a safe and functional infrastructure.

Civil engineering is a discipline that represents the whole category of engineering essential to human life. In the Civil Engineering Course, students start out acquiring a basic level of knowledge to acquire requisite skills as a technical engineer. Then, they are expected to deepen their understanding of the principles through lectures. The curriculum is not confined to traditional subjects (materials, structure, soil, water, planning, etc.). Rather, it is a versatile program that includes subjects in new fields and enables students to conduct interdisciplinary research because civil engineering deals with a wide range of fields related to an infrastructure that contributes to improvement in social welfare. Alumni have established successful careers as engineers working at government offices, public organizations and private companies engaged in planning, designing and implementing the development of infrastructures.

Course: Mechanical Engineering

Respond to the needs of various students as a graduate school that is open to society.

Needless to say, mechanical engineering has played an important role in the development of many industries such as automobiles, machinery, aviation, vessels, railways, architecture and factories. As the result of recent fast-growing technological innovation, however, the structure of industries has become more versatile and has changed dramatically. As a member of the graduate school that is open to society, the Mechanical Engineering Course offers programs that are tailored to the needs of various students. The curriculum includes subjects in cutting-edge fields, comprising lectures that respond to the versatile and complicated systems of the latest disciplines, and academic research based on basic research. In addition, students are expected to acquire creativity, insight, and the problem-solving capacity required by researchers by participating in research seminars and academic conferences. The Mechanical Engineering Course helps students improve their integral research competencies.
Course: Management Engineering

The combination of comprehensive vision and broad knowledge for the optimization of a management system.

Because of its interdisciplinary characteristics, management engineering requires the mastering of broad knowledge and various skills. The Management Engineering Course offers a curriculum that enables students to master required knowledge and skills, based on six fields: management information system, management science, human science, production and distribution system, business management, and service management. Therefore, the course is designed to prepare creative professionals who can analyze problems that occur in the planning, design, and management stages of a management system and find optimal solutions based on their analysis. Because the theories and skills in management engineering are applied to a variety of fields, alumni have established their careers in diverse areas such as manufacturers, retailers, service businesses, finance, hospitals, and administrative offices and contributed to the scientific studies of management and the informatization and globalization of management.

Faculty Areas of specialization (Research topics)
Tatsuo Ishihara Management Science, Applied Probability
Saichi Neki Marketing, Marketing Information System, Regional I-O Table, Real Option.
Tamotsu Noji System Architecture, Intelligent System
Masanobu Matsumaru Cost Management Engineering, Business Management Engineering
Kenji Matsunaga Mathematical systems engineering, Production management
Mitsuhiro Karashima •Human Factors Engineering and Ergonomics •Human Interface
Hirokazu Mizuno Information systems engineering
Hiromi Moriyama Manufacturing Systems Engineering, Mathematical Programming

Endeavor to develop cutting-edge technology through an interdisciplinary organizational structure that integrates specialized fields.

Today's industrial arena is looking forward to the development of high value-added technology. Therefore, it is essential to foster engineers, researchers and managers with a high level of expertise, who can play a central role in the development of such technology. As a result, people pay more attention to graduate school as an important training and research centers of advanced science and technology. In reply to these needs, the Graduate School of Industrial Engineering adopts an interdisciplinary organization structure that comprises three courses, without adhering to the conventional structure based on the department and majors of undergraduate schools. This system leads to an education and research environment where the staff and students can study a wider range of subjects of various fields of technology, engage in smooth communication and integration with specialists in other fields, and carry out their own research with a flexible attitude.

Course: Production Engineering

Research and development in the next generation of production technology that benefits the industrial world.

The Production Engineering Course is divided into three sub-courses: Energy Engineering, which involves study and research on the basic and advanced levels of engineering related to various energy resources; Material Development Engineering, which deals with subjects such as the basic study of the characteristics of thin films and physical reconstruction techniques of metal materials; and Machining Engineering, which introduces material processing and production technologies. Taking into account the recent trend that robots play a central role in machinery, the emphasis of the curriculum is on electromechanics. Practical education and research activities are conducted through the employment of instructors who have worked at private companies. The mission of the course are to offer training that enables students to master not only specialized knowledge and skills, but also the problem-identification and problem-solving capacity required by society and to foster specialists with the high levels of expertise, broad vision, and an interdisciplinary outlook who can respond to the real-time needs of the industrial arena.

Faculty Areas of specialization (Research topics)
Yoshito Sonoda Wave-Optics and Acoustics, Laser Application and Measurement
Yoichi Nakazono Fluid Engineering, Aero-acoustic
Daisuke Okano Application of laser and plasma
Atushi Ohtomo Control Engineering, Robotics.
Osamu Mitarai Fusion Engineering, Plasma Engineering
Course: Information Engineering

A training course for practical engineers who can respond to both the hardware and software fields of the information industry.

The information industry is roughly divided into the hardware industry (producers of computers) and the software industry (users of computers). According to this classification, the Information Engineering Course offers a curriculum that comprises information engineering and applied information science.

Students are recommended to choose one as the main study course and the other as a supplementary study course to master interdisciplinary and practical knowledge and skills. The specialized subjects of information engineering include telecommunication engineering, computer architecture theory and image engineering while the specialized subjects of applied information science include software computing, image processing, and information systems.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yoichiro Iwasaki</td>
<td>Transportation systems engineering, Image processing technology</td>
</tr>
<tr>
<td>Ichiro Takagi</td>
<td>Management Science, Mathematical Economics and International Economics</td>
</tr>
<tr>
<td>Ryoichi Tsuda</td>
<td>Biological Information Engineering</td>
</tr>
<tr>
<td>Toshiyuki Nakayama</td>
<td>1. Computer simulation of nano-materials processing, 2. Efficient course generation method using electrical discharge sound</td>
</tr>
<tr>
<td>Tsuyoshi Ideguchi</td>
<td>Electromagnetic Compatibility for Telecommunication Systems, Kansel Engineering</td>
</tr>
<tr>
<td>Atsushi Iwashita</td>
<td>Remote Sensing Interpretation for Disaster prevention</td>
</tr>
<tr>
<td>Mitsumi Fujishita</td>
<td>Radio position astronomy</td>
</tr>
<tr>
<td>Yoshikai Matsuyama</td>
<td>Imaging technology</td>
</tr>
</tbody>
</table>

Course: Architecture and Civil Engineering

Training in the two basic skills required by the construction industry: "construction" and "sustainability"

The research fields of this course centers around architecture and civil engineering, which share the following characteristics: both contribute to the development of society through construction activities and both play an important role in protecting the environment through the realization of sustainable development. The Architecture and Civil Engineering Course presents an interdisciplinary curriculum that is built on the concepts of construction and sustainability and adhering to the conventional classification of architecture and civil engineering. The construction fields include structure stability, structural design, and earthquake engineering while the sustainability fields include community systems development, environmental planning, and water environment engineering. Through the learning of these specialized subjects and attending research seminars, students will become architectural or construction engineers with high levels of expertise.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michiharu Watanabe</td>
<td>Histories of Architecture and City planning in Ancient Greek and Roman World</td>
</tr>
<tr>
<td>Mitsushiro Kashiwagi</td>
<td>Application of Conjugate Gradient Method to Finite Element Analysis Iterative Subspace Eigenvalue Analysis</td>
</tr>
<tr>
<td>Masanori Miyazaki</td>
<td>Estimation and its Applicability to Vibration Characteristics of Ground Surface, Estimation of Ground Strong motion and its Applicability, Estimation and assessment of Ground Surface Strong Motion and Structural Disaster during Earthquake</td>
</tr>
<tr>
<td>Seijin Tanaka</td>
<td>Traffic Engineering, Study on Bus Frequency for Passengers, Study on Optimum Position of Guiding Blocks on Footpaths</td>
</tr>
<tr>
<td>Chikae Watanabe</td>
<td>Bicycle traffic planning</td>
</tr>
<tr>
<td>Shojo Asakami</td>
<td>Geotechnical Engineering, Geology</td>
</tr>
<tr>
<td>Tsutomu Ichikawa</td>
<td>Water Cycle, Groundwater Hydrology</td>
</tr>
<tr>
<td>Masafumi Kato</td>
<td>Bridge Engineering, Vibration Engineering</td>
</tr>
<tr>
<td>Yasuhiro Migita</td>
<td>Ultimate Strength and Ductility of Polygonal Section Steel Columns</td>
</tr>
</tbody>
</table>

Course: Information and Communication Technology

The mission of the Graduate School of High Technology for Human Welfare is to train students to become leading science and technology specialists who specialize in the following fields: information and communication technology, material science and technology, biological science and technology, and biochemical engineering. The ideal image of future science and technology specialists are those who strive to develop science and technology that can contribute to human welfare and those who are gifted with adaptability to learn as many academic disciplines as possible while maintaining a high level of expertise in their own fields. The school encourages education and research activities that lead to the learning of problem-solving skills, the mastering of expertise and comprehensive knowledge, and cooperation with the industrial world. Although the courses of the school are divided into more detailed sub-courses, students are expected to have a broader perspective and knowledge through a series of requisite subjects that are shared by all courses as the core of all fields of the courses.

Train students to become researchers gifted with adaptability and specialty, who can establish a successful career in advanced technology fields.

Deeply entrenched in communities, information networks continue to develop more broadly and deeply. The network itself, and the information communicated via the network (content) become important infrastructures. The Information and Communication Technology Course helps students acquire not only technical and research skills concerning multimedia, -- a specified field among a cluster of information and communication technologies and multimedia networks, but also develop a human-based and comprehensive outlook. The course trains students to become high-level professional development engineers and researchers who, with a strong basis in undergraduate concepts and rules concerning information and network communication, can voluntarily select an optimal approach to goals, specify problems and find solutions.

Course: Material Science and Technology

Training material development engineers who can meet the needs of society.

While materials that support the foundations of industry become increasingly diverse and multifunctional, an urgent priority is to remove the negative impacts on the environment brought by the development and use of materials. In response to these trends, the Material Science and Technology Course aims at training students to become engineers who can engage in the development of new materials and technologies while paying attention to their environmental impacts. Keeping in mind that engineers are required to be sensitive to various social needs, we also provides students with up-to-date information about social trends through special lectures by outside researchers and engineers who work in the industrial world and lectures on patent law and corporate management. Students can obtain a comprehensive perspective by actively studying the relationships between materials and the environment through each of the subjects.
Course: Biological Science and Technology

Training for professional biotechnology engineers based on a solid foundation.

Biological science and biotechnology, one of the applied fields of biology, has developed rapidly, and many research achievements in these fields have been applied to various fields in the community. Biotechnology has become a familiar term in our everyday life. Against the backdrop of this trend, the Biological Science and Technology Course aims to train students for professional engineers who can contribute to the society of the future with the firm foundation of knowledge. Students are expected to acquire a high level of expertise and problem-solving skills through lectures and research designated by each research division together with the abilities to understand and judge from wider viewpoints. The course helps students improve their general knowledge through special lectures such as the Biological Engineering, in which all professors and instructors of the course lecture on their specialty on a rotating basis.

Course: Ocean Engineering

Engaging in unique research activities that combine oceanography with engineering.

Ocean engineering, the branch of oceanography concerned with engineering, comprises ocean measurement engineering, ocean information engineering, ocean civil engineering, ocean environment engineering, marine engineering, and sailing engineering. The goal of ocean engineering is to create tools, systems and technologies that are necessary to achieve comfortable living standards to the fullest sense by applying physical law and the fundamental rules of nature to technology in terms of the relationship between the ocean and human beings while achieving a balance between human life and the natural environment. The Ocean Engineering Course is divided into three sub-courses: Ocean Measurement Engineering, Ocean Civil Engineering, and Ocean System Engineering. The mission of the course is to foster marine researchers and specialists who can lead the next generation.

Course: Bio-Medical Engineering

Promoting high-level academic research in interdisciplinary field of medicine and engineering.

The circumstances surrounding the future of medicine are unfavorable, and medical society is currently facing many difficulties: limited medical resources, an aging society with a falling birthrate, environmental problems, globalization and bioethics. Against the backdrop of these trends, biomedical engineering plays an important role. Based on a broad knowledge and the general and interdisciplinary knowledge about and the practical studies of medicine and engineering taught at undergraduate courses, the Bio-Medical Engineering Course offers a higher level in and more specialized education about advanced fields of biomedical engineering. The mission of the course is to foster human resources who can apply the mechanisms of organisms to engineering and apply the achievements of engineering to medicine or clinical engineers who can contribute to the development of clinical arena as leaders.
Course: Fisheries Science

The training of the ability to examine various phenomena concerning aquatic organisms with wider vision.

Fisheries science is an interdisciplinary academic course that conducts scientific and technological research on the fisheries industry, which engages in the production and use of aquatic organisms. The Fisheries Science Course constitutes the Graduate School of Marine Science & Technology, education and research institute that studies ocean-related science and technology. Compared with students majoring in fisheries at other graduate schools, students can acquire more broadly knowledge by studying subjects offered by the Ocean Engineering Course, Marine Science Course, and Marine Bioscience Course. One of the great characteristics of this course is that students can develop the ability to examine various phenomena concerning aquatic organisms with a broader point of view. The specialties of the faculty cover various academic branches from biology and cellular biology of aquatic organisms to their usage and study. Students are expected to attend logical thinking and attain highly specialized knowledge and skills by attending research seminars and completing a dissertation.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Izumi Akagawa</td>
<td>Fish behavioral science</td>
</tr>
<tr>
<td>Nobuoaki Akiyama</td>
<td>Aquaculture</td>
</tr>
<tr>
<td>Shinpei Ueno</td>
<td>Marine Ecology</td>
</tr>
<tr>
<td>Itsuro Uotani</td>
<td>Ichthyology</td>
</tr>
<tr>
<td>Shin-ichi Ono</td>
<td>Fish pathology</td>
</tr>
<tr>
<td>Noboru Kato</td>
<td>Fisheries Food Science</td>
</tr>
<tr>
<td>Kenshi Kimura</td>
<td>Fisheries biology</td>
</tr>
<tr>
<td>Hirota Kanuma</td>
<td>Food hygiene</td>
</tr>
<tr>
<td>Shozo Sawamoto</td>
<td>Planktonology</td>
</tr>
<tr>
<td>Takayuki Shoji</td>
<td>Fisheries physiology</td>
</tr>
<tr>
<td>Nobuhiro Suzuki</td>
<td>Aquaculture</td>
</tr>
<tr>
<td>Sho Tanaka</td>
<td>Marine Conservation Biology</td>
</tr>
<tr>
<td>Yoichi Tanaka</td>
<td>Fish ecology: Observation of the reproductive behavior and early life history of the sea fish, in an aquarium.</td>
</tr>
<tr>
<td>Genjiro Nishi</td>
<td>Fisheries behavioral ecology</td>
</tr>
<tr>
<td>Atsushi Fukui</td>
<td>Ichthyology</td>
</tr>
<tr>
<td>Tsukasa Murayama</td>
<td>Cytology</td>
</tr>
<tr>
<td>Satoshi Ishikawa</td>
<td>Conservation ecology</td>
</tr>
<tr>
<td>Shuhei Ohnishi</td>
<td>Population Dynamics</td>
</tr>
<tr>
<td>Hiroyuki Yokochi</td>
<td>Coral reef ecology</td>
</tr>
<tr>
<td>Tadashi Masuyama</td>
<td>Marine biology</td>
</tr>
</tbody>
</table>

Marine Science

The scientific study of natural phenomena surrounding the ocean.

The Marine Science Course, which consists of marine physics, marine chemistry, marine geology, and solid-earth science, aims at the scientific studies of natural phenomena observed in environments surrounding the ocean. The curriculum is comprised of special lectures where students acquire an advanced level of expertise relating to their research field based on basic knowledge about oceanography and marine resources mastered through undergraduate courses, and research seminars where students prepare for the completion of a master’s degree dissertation. The mission of the course is to train students as excellent researchers and engineers who have wider vision, comprehensive capacity for judgment and the high level of expertise.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomohiko Oishi</td>
<td>Marine Optics</td>
</tr>
<tr>
<td>Yoshimasa Kato</td>
<td>Geochemical cycle in the seawater-sediment system.</td>
</tr>
<tr>
<td>Yongai Kim</td>
<td>Goniometric magnas, gold and silver deposits</td>
</tr>
<tr>
<td>Kunio Kutsuwada</td>
<td>Physical Oceanography</td>
</tr>
<tr>
<td>Yoshio Sato</td>
<td>Chemical Oceanography, Preservation of the environment of enclosed sea areas.</td>
</tr>
<tr>
<td>Yoshikazu Shimizu</td>
<td>Numerical Modeling, Computational Physics</td>
</tr>
<tr>
<td>Toshiyasu Nagao</td>
<td>Geophysics, Selino-Electromagnetics</td>
</tr>
<tr>
<td>Mitsuji Nishimura</td>
<td>Climate and environmental analyses using organic molecules in various samples including sediments, soils, water, ices and living organisms</td>
</tr>
<tr>
<td>Kenji Nimoto</td>
<td>Marine geological structure and tectonic history</td>
</tr>
<tr>
<td>Tadashi Masuyama</td>
<td>Exploitation and Transport System of Mineral Resources on/under seabed</td>
</tr>
<tr>
<td>Kuniaki Yasuda</td>
<td>Physical Oceanography</td>
</tr>
<tr>
<td>Shigekazu Kuwamoto</td>
<td>Geophysics, Geodynamics.</td>
</tr>
<tr>
<td>Isamu Sakamoto</td>
<td>Resources studies</td>
</tr>
<tr>
<td>Keiko Sayanagi</td>
<td>Geophysics, Solid earth electromagnetism, Seismo-electromagnetism</td>
</tr>
<tr>
<td>Hisashi Narita</td>
<td>Biogeochemical processes in the ocean with chemical proxies.</td>
</tr>
<tr>
<td>Masaki Hanada</td>
<td>Marine Geology</td>
</tr>
<tr>
<td>Hisato Baba</td>
<td>Geophysics</td>
</tr>
<tr>
<td>Masataka Kinoshita</td>
<td>Geophysics</td>
</tr>
</tbody>
</table>

Course: Marine Bioscience

Conduct cellular and genetic level analyses of marine organisms.

The ocean, the birthplace of the first organism, is home to approximately 500,000 species of organism from microbes to mammals, all of which have completely different characteristics and range of diversity compared to terrestrial organisms. The main research targets in the Marine Bioscience Course are marine microbes and algae, the first element in marine ecosystems. Students are expected to understand the biology of the organisms at the cellular, molecular and genetic levels. The curriculum is comprised of lectures and research seminars through which student master broad knowledge about basic field of biology and advanced skills, a logical outlook and logical reasoning techniques. After graduation, students have many choices, such as further pursuit of study in a doctoral program to become a researcher or employment at various types of companies.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toshiko Abe</td>
<td>The study on the toxins produced by blue-green algae.</td>
</tr>
<tr>
<td>Mitsuo Ogura</td>
<td>Molecular biology of regulation of gene expression in prokaryote</td>
</tr>
<tr>
<td>Shujiro Kumasawa</td>
<td>Physiological studies on marine photosynthetic microorganisms.</td>
</tr>
<tr>
<td>Toshio Saito</td>
<td>Marine Toxins.</td>
</tr>
<tr>
<td>Hiroshi Saito</td>
<td>Organic Chemistry, Bioorganic Chemistry.</td>
</tr>
<tr>
<td>Teru Tanaka</td>
<td>Molecular biological study on Bacillus subtilis genes</td>
</tr>
<tr>
<td>Takako Nakatsuji</td>
<td>Developmental biology of fish (ice goby and others), including germ cell development, morphogenesis and gene function.</td>
</tr>
</tbody>
</table>
Two courses that engage in research into cutting-edge technology in the modern world.

In accordance with the sophistication of science and technology, the academic world is embarking on interdisciplinary education and research on complex topics that cut across disciplines or on topics at the boundaries of disciplines. In response to this trend, the Graduate School of Science and Engineering presents two courses: the Electronic and Information Engineering Course, which aims at fostering high-level and creative science and technology specialists who can establish a successful career in today's advanced information society; and Environmental and Biological Sciences, which aims at fostering advanced technology engineers and scientists who can contribute to the environmental conservation and the development of human society in the 21st century. Both courses boast well-developed curricula that include lectures such as Advanced Science and Technology Special Class, in which students acquire the basic skills as a researcher or professional engineer, practical training, special research seminars and a series of special lectures, which cover a variety of topics.

Course: Electronic and Information Engineering

The mastering of expertise and creativity that can respond to the demands of information societies.

The rapid development of informatization and globalization in today's society leads to a higher level of interdisciplinary education and research. The development of interdisciplinary academic fields has resulted in the production of a variety of new advanced technologies. With the mission of training students for engineers with a high level of expertise who can respond to the demands of this information society, the Electronic and Information Engineering Course offers the education that focuses on basic training in specialized and advanced technology common to electronic and information engineering. At the same time, the three important fields of advanced technology—information engineering, material engineering, and bioelectronics—are taught by combining lectures with research activities. In particular, students can enjoy a wider range of choice concerning the classes related to information engineering because the course increases the number of classes, alternating them every second year.

Course: Environmental and Biological Sciences

Integrated approach that is built on the active use the ecosystem unique to Hokkaido.

As graduate-level equivalents of the Marine Biology and Sciences major and Bioscience and Technology major at the Biological Science and Engineering department (undergraduate school), the Environmental and Biological Sciences Course presents two sub-courses: Environmental Science and Biological Science. The former focuses on the environment, especially marine ecosystems in polar and sub-polar zones and engages in comprehensive education and research activities that cover physics, chemistry, biology, and geography. The latter pays attention to plants, cultured cells of plants, and microbes and engage in education and research activities on topics such as the examination of the physiological and biochemical influences of various global environmental changes, the isolation and identification of biologically active agents that are involved in the interaction between organisms, the development of functional food made of materials produced in northern areas, and the isolation and application of new types of microbes.

Faculty

<table>
<thead>
<tr>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tokihiro Kono</td>
</tr>
<tr>
<td>Hiroshi Hattori</td>
</tr>
<tr>
<td>Kenji Yano</td>
</tr>
</tbody>
</table>

Faculty

<table>
<thead>
<tr>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shin-ichi Amino</td>
</tr>
<tr>
<td>Takeshi Sakaki</td>
</tr>
<tr>
<td>Yuichi Takeuchi</td>
</tr>
<tr>
<td>Hiroyuki Nishimura</td>
</tr>
<tr>
<td>Hirofumi Hirata</td>
</tr>
<tr>
<td>Hidetoshi Matsuyama</td>
</tr>
</tbody>
</table>

Faculty

<table>
<thead>
<tr>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun Awaka</td>
</tr>
<tr>
<td>Takashi Iizumi</td>
</tr>
<tr>
<td>Eiji Okamoto</td>
</tr>
<tr>
<td>Fumio Kato</td>
</tr>
<tr>
<td>Minoru Kotaki</td>
</tr>
<tr>
<td>Tatsuo Shimono</td>
</tr>
<tr>
<td>Tomoaki Shirakawa</td>
</tr>
<tr>
<td>Syusuke Yama</td>
</tr>
</tbody>
</table>

Faculty

<table>
<thead>
<tr>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haruki Komatsu</td>
</tr>
<tr>
<td>Tatsuro Murata</td>
</tr>
<tr>
<td>Yoshikazu Hoshi</td>
</tr>
<tr>
<td>Kiyotaka Kabata</td>
</tr>
<tr>
<td>Fukashi Koyanagi</td>
</tr>
<tr>
<td>Takeshi Shibata</td>
</tr>
<tr>
<td>Hisaga Tobikova</td>
</tr>
<tr>
<td>Yasuo Morimoto</td>
</tr>
<tr>
<td>Chinobu Okamoto</td>
</tr>
</tbody>
</table>

Faculty

<table>
<thead>
<tr>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomohiro Arai</td>
</tr>
<tr>
<td>Keiji Igarashi</td>
</tr>
</tbody>
</table>
Course Physical Education

Training for researchers with a high level of expertise and for specialists in various fields.

Physical education is a discipline that examines facts and phenomena concerning the relationship between human and physical activities. The research fields of physical education cover a wide range of disciplines from the humanities to the social sciences, and to the physical and natural sciences. In addition to the traditional framework of school gymnastics and societal gymnastics, physical education has expanded its boundaries these days, extending to the study of sports, the study of leisure and recreation, and sport management. The mission of the Graduate School of Physical Education is to train students as researchers who specialize in physical education, sports and health or specialists who play an important role across many fields such as health and physical education, sports instruction and sports and leisure management.
Takayuki Asahara  |  Stem Cell Biology, Regenerative Medicine, Vascular Medicine
Kiyoshi Ando  |  Hematology, Regenerative Medicine
Masahiro Iida  |  Otorhinolaryngology
Yuki Ikaru  |  Arteriosclerosis, Myocardial Infarction, Catheter Treatment
Joe Ikeda  |  Molecular Science, Molecular Biology, Biochemistry
Naoki Ishii  |  Aging Mechanisms, Defense Mechanism for Oxygen Stress, Molecular Genetics
Hideyuki Ishida  |  Physiology
Shunichiro Izumi  |  Obstetrics and Gynecology
Iekuni Ichikawa  |  Biological Ethics, Pediatrics
Itsuro Inoue  |  Human Genetics, Genomic Medicine
Hiroshi Inoue  |  Respiratory Surgery
Sadaki Inokuchi  |  Emergency Medicine
Hitoshi Inoko  |  Molecular Genetics
Kenji Imai  |  Structure of Molecular Genetics
Toshikado Imai  |  Digestive Surgery
Yujiro Imaizumi  |  Radiology
Katsuhiko Iwasaki  |  Perinatal Medicine, Clinical Genetics
Toshikado Ueda  |  Cardiovascular Surgery
Shigenori Uno  |  Pediatric Surgery
Yoshio Ueyama  |  Diagnostic Pathology
Toyauchi Uchida  |  Urology
Kenji Eguchi  |  Respiratory Medicine
Yukio Oizumi  |  Radiation Oncology
Yoichi Ogushi  |  Medical Information, Medical Statistics
Tomoki Osawa  |  Forensic Science
Yoshitaka Oka  |  Orthopedic Surgery, Hand and Elbow Surgery
Kyoji Ogoshi  |  Digestive Surgery
Yoshitaka Osamura  |  Pathology, Endocrinology, Oncology
Akira Ozawa  |  Dermatology
Shinichi Kato  |  Cell Transplantation
Kenji Kawai  |  Ophthalmology
Yasuhiro Kitagawa  |  Neurology
Minou Kimura  |  Molecular Biology
Ichiro Kuwahara  |  Respiratory Disease, Respiratory Physiology
Yasuhiro Koga  |  Infectious Diseases
Shinya Goto  |  Internal Circulatory Medicine
Hiroyuki Kobayashi  |  Pharmacology
Tetsuro Kondo  |  Respiratory Physiology, Bronchial Asthma, Sleep Apnea Syndrome
Akira Saito  |  Intraspecial Science, Science of Artificial Organs
Sotaro Sadahiro  |  Digestive Surgery
Tomiyasu Suzuki  |  Anesthesiology
Yasu Suzuki  |  Rheumatoid-Collagen Disease, Bone Metabolism
Atsushi Takagi  |  Internal Medicine, Digestive Organs
Shigeharu Takagi  |  Neurology, Study of the Stroke
Teruhisa Tanabe  |  Internatural Circulatory Medicine
Michio Tsuda  |  Medical Chemistry, Molecular and Cellular Biology
Toshio Terachi  |  Urology
Yutaka Tokuda  |  Breast and Endocrine Surgery
Koiji Toriyami  |  Pathology
Hisao Nakasaki  |  Digestive Surgery
Isao Kashima  |  Emergency Medicine
Telerehino, Medical Communications
Yukio Oizumi  |  Radiology
Hitoshi Morii  |  Cardiovascular physiology, Regenerative medicine, Structural biology

Course: Medical Science (Master’s program)

Training for personnel who can establish a successful career in various fields of medicine and healthcare.

The Medical Science Course, the master’s program of the Graduate School of Medicine, is a very rare kind of course in Japan. The Graduate School of Medicine has a four-year doctoral program. A master’s degree or equivalent level of expertise is prerequisites for students taking the doctoral program. Tokai University has integrated first and second level medical graduate school system. By setting up a Medical Science Course, Tokai University provides an opportunity to study an advanced level of medicine for students who have completed any undergraduate course. The curriculum includes molecular cell biology, medical information, social medicine, international medicine, human anatomy, infectious disease and immunology, clinical medicine, and ethics (bioethics, science ethics, and medical ethics). The mission of the course is not limited to the provision of education that makes students prepare for the doctoral course. It also aims at fostering personnel who provide medical and healthcare services in communities.

Faculty Areas of specialization (Research topics)

Takayuki Asahara  |  Stem Cell Biology, Regenerative Medicine, Vascular Medicine
Kiyoshi Ando  |  Hematology, Regenerative Medicine
Masahiro Iida  |  Otorhinolaryngology
Yuki Ikaru  |  Arteriosclerosis, Myocardial Infarction, Catheter Treatment
Joe Ikeda  |  Molecular Science, Molecular Biology, Biochemistry
Naoki Ishii  |  Aging Mechanisms, Defense Mechanism for Oxygen Stress, Molecular Genetics

Masaichi Yamamura  |  Biochemistry

Mitsunori Matsumae  |  Molecular Biology, Molecular Oncology Pathology
Minoru Matsumae  |  Neurology
Noriaki Hayama  |  Drug Development
Takashi Hosaka  |  Psychiatry
Yasuhiro Homma  |  Metabolic Circulatory Medicine
Tomiya Suzuki  |  Digestive Surgery
Masaichi Matsumae  |  Neurosurgery

Tetsuya Mine  |  Gastroenterological Medicine (Liver, pancreas, digestive tract)
Hayato Miyachi  |  Examination Diagnosis
Toshiro Miyata  |  Kidney disease, Diabetes, Life-style Related Diseases
Joji Mochida  |  Orthopedic Surgery, Spinal Surgery
Hideko Mori  |  Environmental Physiology, Regenerative Medicine, Structural Biology

Masaichi Yamamura  |  Biochemistry
Course: Health and Social Work

Specialist education built on an integrated system that unites nursing and medicine with social welfare, clinical research and practical training.

Traditional, nursing, medicine, and social welfare have been treated as independent disciplines. Today, however, there is a call for a wider vision that integrates these three fields in order to respond to the diverse needs of society. The mission of the Health and Social Work Course is to foster specialists who, gifted with a broad perspective, can embrace interdisciplinary attitudes that go beyond the conventional boundary between nursing, medicine and social welfare in terms of aid philosophy, outlook, way of thinking and practical skills. Students are not expected to merely work out a compromise between nursing, medical and social welfare. Instead, they are expected to acquire research competence supported by a clinical approach so that they can critically analyze experiences and situations that are taking place at real work sites. Ultimately, students are expected to apply the knowledge, skill and attitudes mastered through research analysis and interdisciplinary education to clinical sites. With this mission in mind, the course presents systematical specialist education for students who want to contribute to improvement in the welfare of humanity.

Faculty

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Areas of specialization (Research topics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shigeru Oka</td>
<td>Theory on the Way of Life for Persons with Disabilities, Theory on the Awareness of Worth</td>
</tr>
<tr>
<td>Eiji Kitajima</td>
<td>Social Work Theory</td>
</tr>
<tr>
<td>Yoko Kitano</td>
<td>Development of Children with Hearing and Language Disabilities and their Acquisition of Language, Artificial Inner Ear Rehabilitation, Welfare of Persons with Hearing Disabilities (Guarantee of Information)</td>
</tr>
<tr>
<td>Ryuki Kobayashi</td>
<td>Infant Psychiatry, Child Psychiatry, Clinical Relationship Disorder</td>
</tr>
<tr>
<td>Tetsuro Tate</td>
<td>Psychiatry, Psychoanalysis, Eating Disorders</td>
</tr>
<tr>
<td>Masayuki Matsumoto</td>
<td>Modern Art, Art Application</td>
</tr>
<tr>
<td>Koichi Taniguchi</td>
<td>Elderly Psychology, Theory of the Elderly and Healthy Activities</td>
</tr>
<tr>
<td>Masanori Nishimura</td>
<td>Social Gerontology, Measurement Sociology, Health Welfare for Elderly</td>
</tr>
<tr>
<td>Machiko Ohara</td>
<td>Medical Welfare, Medical Social Work</td>
</tr>
</tbody>
</table>

Informative of the faculty as of 2007
Scholarship System and Tuition

A variety of scholarships that support student learning are available

Tokai University offers a unique scholarship, the Tokai University Graduate Student Scholarship for graduate students who need financial assistance. The following scholarships are also available: Shigeyoshi Matsumae Memorial Foundation Extracurricular Enrichment Scholarship; Tokai University Temporary Scholarship Loan; and scholarships given by local governments and private scholarship associations and foundations. Eligibility for these scholarships depends on the student’s objectives and conditions.

<table>
<thead>
<tr>
<th>Scholarship System (2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tokai University Graduate Student Scholarship</td>
</tr>
<tr>
<td>A scholarship unique to Tokai University. Awarded to students with excellent academic performance and character</td>
</tr>
<tr>
<td>Type: Award</td>
</tr>
<tr>
<td>Value: 720,000 yen a year (half is awarded in the spring term and the remainder in the fall term)</td>
</tr>
<tr>
<td>Duration: One year</td>
</tr>
</tbody>
</table>

Shigeyoshi Matsumae Memorial Foundation Extracurricular Enrichment Scholarship

This scholarship helps students who have lofty goals in cultural activities, sports activities, social activities or volunteer activities

| Type: Award |
| Value: Individual: 300,000 yen or less Group: from 100,000 to 500,000 yen |

Tokai University Temporary Scholarship Loan

Tokai University offers financial aid loans to students who encounter difficulties in paying their fees due to family emergencies such as a death in the family or the unemployment of/injury to, to breadwinner.

| Type: Loan (no interest) |
| Value: Reduction of payment, corresponding to tuition fees (up to 600,000 yen) |

Scholarships by Japanese Government and Japanese Student Services Organization (JASSO)

The Ministry of Education, Culture, Sports, Science and Technology (Monbukagakusho: MEXT) of the Japanese government has been inviting international students to study in Japan at state expense since 1954. Applications should be made through Japanese embassies or consulate-generals abroad or Japanese universities.

| Type: Award |
| Value: Research student (graduate school student & research student): 172,000 yen a month |

"Honors Scholarship" for privately financed international students has been provided by JASSO. Application should be made through Japanese universities.

| Type: Award |
| Value: Graduate school student & research student: 70,000 yen a month |

JASSO offers “Short-term Student Exchange Promotion Program (Inbound) Scholarship” for those accepted by Japanese universities under student exchange agreements with their home universities.

| Type: Award |
| Value: Graduate school student: 80,000 yen a month |

Scholarships by local governments and international associations

Local governments in Japan provide scholarships to people living in their district or to students who attend schools in their district.

Scholarships by private foundations

Private foundation scholarships are provided by private companies or organizations. Reflecting the objective and character of the company or organization, scholarships are likely to be granted to students attending schools in a given district, or limited to special subjects related to the company, or to be provided to students from a certain country or region with which the enterprise has exchanges.

Scholarships available abroad

Although most of the scholarships are available after coming to Japan, several local governments, international associations and private foundations accept applications from overseas.

Teaching Assistant System (2004-2006)

The Teaching Assistant system (TA system) allows graduate students who are recognized as outstanding by the university to engage in tutoring for undergraduate students and teaching-support tasks (experiments, practical seminars, and applied seminars). The university pays a stipend to the TAs in return for their work. The TA system can help students not only financially but also educationally because it provides students with the opportunities to acquire skills as future instructors and researchers.
Career Paths and Employment

As specialists with high levels of expertise, alumni play a leading role at the forefront of a wide range of industries. As modern society becomes more complex, sophisticated expertise and skills are required in various fields. People have begun to pay close attention to graduate schools as training centers for high-level specialists while undergraduate education has placed growing emphasis on humanities and basic education. Many private companies express a desire to hire students who have completed graduate courses. Against this backdrop, the number of students who complete graduate courses at Tokai University graduate schools has steadily increased. Many alumni play an important role at the forefront of many companies as specialists.

In 2006, 438 of all the students who completed programs at Tokai University graduate schools decided to establish their careers as specialists working in corporate environments. The largest portion of students (50.7%) is employed by manufacturers, followed by the information and communications industry (14.9%). Many students have also established their careers in the specialist services and construction industries. Alumni play important roles in various fields. The majority of graduate students are employed by large companies (more than 500 employees) or companies listed on the first and the second sections of the Tokyo Stock Exchange.

### Main companies of employment (2004-2006)

**Construction**

**Manufacturing**

**Wholesale and retail**
- AEON Co., Ltd./Yazaki Corporation/Toshiba Tec Corporation/Hitachi High-Techologies Corporation/Seven-Eleven Japan Co., Ltd./Yurindo Co., Ltd.

**Transport**
- East Japan Railway Company/ Central Japan Railway Company/ All Nippon Airways Co., Ltd./Narita International Airport Corporation

**Utilities**

**Real Estate**
- Sumitomo Real Estate Co., Ltd./Kowa Real Estate Co., Ltd./Leopalace 21 Corporation/Sun Frontier Fudousan Co., Ltd.

**Finance and Insurance**
- The Kanagawa Bank, Ltd./Nikko Citigroup Limited

**Service**
- AltTech Corporation/OPT, Inc./Intelligence. Ltd./Shiga Security Services Co., Ltd./SECOM Co., Ltd./DoCoMo Mobile Inc./METEC Corporation/ATOX Co., Ltd./Nikken Sogyo Co., Ltd.

**Civil Service**
- National government employee/Local government employee

**Educators, other**
- Junior high school - Senior high school
- Teacher/Private school clerical work
The Voices of Current Students and Alumni

Marine phytoplankton teach us about global environmental changes

When I was in elementary school, I watched the movie Free Willy and was enthralled by the free movement of the Orca. This is when I started to develop an interest in the ocean. As I continued to study oceanography during my undergraduate years, my interest shifted from large animals to the environment and plankton that support these animals.

I currently conduct research on the relationship between the ocean and nature from the perspective of chemistry. Specifically, I conduct research on the ecology of the plankton. As the increase in carbon dioxide emissions that accompany global warming have become major problems, people have started paying more attention to the roles played by the ocean and plankton as absorbers of carbon dioxide.

In 2005, I was given the chance to participate in a research voyage across the Pacific, which was led by Japan Agency for Marine-Earth Science and Technology. During the voyage from Sekinehama in Aomori to San Diego, California, I was very impressed with the attitude of the staff who was regularly engaged in research. Through my conversations with them, I was able to envision my future more clearly. I want to work at a private company where I can make good use of my observation techniques and contribute to society by working in the field of environmental conservation.

A campus where many graduate schools converge
This interdisciplinary environment facilitates a deeper level of research

I graduated from the Department of Science at Tokai University, majoring in Physics. I currently conduct research on lasers. While preparing for a job interviews before graduating, I decided to enter graduate school to gain a more advanced level of expertise before beginning my career. During my undergraduate studies, I became interested in optical technology and did a double major in Optical Engineering (now: Optical and Imaging Science and Technology) at the Department of Engineering. In hindsight, this experience played a significant role in leading me to my current research on lasers.

One strength of Tokai University’s graduate school is its ideal research environment that is realized through an ample budget and sophisticated facilities. The faculty is passionate, fair, and very attentive to students’ needs. Because many of them have experience in industry, students are able to acquire practical knowledge that has relevance in industry and simultaneously engage in socially meaningful research.

Another strength of Tokai University’s graduate school is that a variety of graduate schools coexist on one campus. There are many types of equipment and facilities that students from other courses can use, although many of them do not know that these are available. In fact, there are too many to fully utilize each facility. I can also talk to the faculty in other research laboratories, courses and schools when I have questions about chemistry and engineering during the course of my research.

After completing the doctoral program, I plan to find a post at a private company that allows me to draw upon my research. Laser technology is a field with great potential for growth. Instead of using what I have researched and learned for personal gain, I hope to return all that I have gained to society by contributing to the development of science and technology in Japan.

Entered a graduate school after experiencing the world of industry
Fully utilizing the investigation and research techniques acquired at graduate school

After completing the undergraduate course, I worked as a designer at a manufacturer of industrial metal parts (hinges, handles for machinery, etc.). At that time, I felt limited because even though I wanted to have a clear image of the environment in which customers utilized the products that I designed, I was in fact, designing industrial parts. Gradually my dream of creating user-friendly products based on clear images of the environment in which they would be used, emerged. I decided to enter graduate school to master the skills that I would need to realize my dream. Because I had already been in industry, my research goals in graduate school were very clear. I could fully devote my energy to my research at the Asahikawa Campus thanks to its many strengths: the high-quality facilities including craft centers; many professors and staff members who are very attentive to the students’ requests and needs; and student support systems, such as scholarships. In addition to my own research, I was able to extend my knowledge to other areas through collaborative research with professors. Currently, I work at a car manufacturer to improve the aesthetic quality of vehicles (grappling with the question, what is an attractive vehicle from the customers’ point of view?). I hope to make good use of my experience at graduate school to continue to create attractive cars for customers.