

Information Design and Communication Course Program

This course is designed to train students to become engineers versed in information and communication technologies by focusing on principles and basics of both software and hardware.



Civil Infrastructure Course Program

The course program aims at nurturing professional engineers who can engage in the design, construction, maintenance and management of social infrastructure for creating the future of the region such as "lifeline systems in cold regions," "an advanced information and communications society" and "infrastructure facilities suitable for the region" to cope with a chronically low birthrate and a rapidly aging society.



Faculty Interview

You have only one life to live. There are things that you can experience only at this very moment. I recommend finding something you can devote yourself to during campus life.

Takeshi Kawamura Associate Professor

©Profile: Completed the former period of the doctoral program in precision engineering at the Graduate School of Engineering, Hokkaido University. Later, obtained a doctoral degree in engineering. Research interests include control engineering and vehicle guidance in snowstorms using near-field communication.



In this course, students learn about both hardware and software involved in computer science and information and communication, which are indispensable in modern society. Information engineers are in short supply in various sectors. To respond to such demand, this course offers a curriculum with broad subjects from the basics to advanced fields, such as artificial intelligence. These days, computers, robots and automobiles are connected to networks using information and communication technologies. It is essential for students entering these fields to systematically learn basic subjects from electromagnetics and electromagnetic wave engineering to applied subjects such as information networks, wireless communication engineering and advanced optical communication engineering. KIT offers an easygoing atmosphere for learning. Students are advised to find something they can be proud of after graduation while nurturing mind and body at KIT.

Faculty Interview

Be curious and accept diversity. Also, acquire a "thinking engine" by enhancing the power of perception.

Kiyoshi Takahashi Professor

©Profile: completed the latter period of a civil engineering doctorate at the Graduate School of Engineering, Hokkaido University. Research interests include urban and transportation planning.



In this course, students learn about "lifelines in cold regions," "advanced information and communication society" and "designing, building, maintaining and managing infrastructure suitable for each region" in Japan's rapidly aging society with a chronically low birth rate. The aim is to foster students who aspire to be employed by construction and construction consulting firms or to become public servants engaged in the management of urban or regional civil infrastructure, by offering fundamental civil infrastructure classes on advanced technologies for managing construction processes, CAD, remote sensing and ICT technologies. The engineering domain is broad and deep, and all aspects are useful for enriching our lifestyle. I believe KIT can offer something that students want to aim at for the rest of their life. It is very much hoped that students will disseminate their ideas and technologies to the world through KIT.

Curriculum

Java Programming I
Java Programming II
Data Structures and Algorithms
Software-design Engineering
Database
Discrete Mathematics
Introduction to Computers
Computer Architecture
Automata
Artificial Intelligence I
Artificial Intelligence II
Decision Theory
System Control Theory

Robotics
Robot Informatics
Fundamental Signal Processing
Digital Signal Processing
Logic Circuits
Probability and Mathematical Statistics
Fundamentals of Electrical Circuit Theory
Design of LSI and Electronic Circuits
Circuit Theory
Electronic Measurement
Optical Information Processing I
Optical Information Processing II
Speech Information Processing

Image Processing and Recognition
Mathematics for Information and Telecommunications
Basic Telecommunication Engineering
Information Network
Electromagnetics
Electromagnetic Wave Engineering
Radio Transmission Engineering
Wireless Communication Engineering
Advanced Optical Communication Technology
Japanese Radio Laws
Fourier Analysis
Mathematics Seminar I
Mathematics Seminar II

Mathematics Seminar III
Mathematical Cryptography
Practical English
Practical Engineering I
Practical Engineering II
Practical Engineering III
Tourism Management Engineering I
Information Design and Communication Engineering I
Information Design and Communication Engineering II
Experiments of Information Design and Communication Engineering I
Experiments of Information Design and Communication Engineering II
Topics in Information Design and Communication
Bachelor's Thesis

*The description refers to the 2020 academic year curriculum and is thus subject to change.

Lecture

Java Programming I-II, Software-design Engineering

Students engage in intensive learning, from the basics of programming using the Java object-orient programming language to practical programming technologies in GUI and video game development.



Wireless Communication Engineering

This lecture series aims at fostering students capable of performing well in the information and communication sector in the future by having them undertake a range of studies, from the basics to applications of wireless communication technologies, which are indispensable in the era of the Internet of Things, represented by the use of smartphones and tablets.



Curriculum

Regional and City Planning
Fundamental Signal Processing
Surveying
Force and Deformation in Structural Mechanics
Construction Materials in Cold Regions
Exercise in Computer Aided Drawing for Civil Infrastructures
Cold Regions Soil Mechanics I
Introduction to Hydraulics
Traffic Infrastructure Engineering
Practical English
Geospatial Surveying Practice

Experiments on Civil Infrastructure Engineering I, II
Integrated Study in Okhotsk Region I, II
Glaciology
Hydraulic Engineering
Cold Regions Soil Mechanics II
Force and Energy Principles in Structural Mechanics
Reinforced Concrete Structure
Digital Communication Engineering
GIS Practice for Civil Infrastructure
Mathematical Methods for Planning
Highway Environmental Engineering

Water Environmental Engineering
Remote Sensing
Numerical Calculation
Ice Covered Sea Engineering
Project Evaluation Engineering
Prestressed Concrete and Hybrid Structure
Structural Analysis
Construction Technology
Snow and Ice Disaster Prevention Engineering
River Engineering
Harbor Engineering

Water and Wastewater Treatment Engineering
Bridge Design and Drafting
Integrated Study of Career Advancement
Hydrology
Explosives Engineering
Infrastructure Management
Applied Ecological Engineering
Bachelor's Thesis

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Integrated Study in Okhotsk Region I, II

Students identify problems facing the Okhotsk region through classes by guest lecturers, their own investigations and brainstorming sessions and by finding effective solutions through teamwork.



Construction Technology

Students acquire basic knowledge about designing and constructing soil structures, which are important and fundamental aspects of civil infrastructure, and learn how to manage construction work using ICT construction and other technologies.



Lecture

Biotechnology and Food Chemistry Course Program

This course is designed to foster the ability as an engineer, along with benevolence and socializing skills, to come up ideas for utilization of materials unique to the Okhotsk region and to solve problems faced by the regional industry using biotechnology and food chemistry.

Regional Management Engineering Course Program

With specialized engineering programs at its base, this course allows students to acquire abilities needed to launch a company or projects, nurture talents to manage and administer them and develop sound engineering and technology know-how. The course is designed to foster "human resources that can serve as leaders in society while implementing practical values of engineering skills" in various professions such as engineers, researchers, entrepreneurs and corporate managers by using both engineering and management abilities.

Faculty Interview

KIT encourages students, in the context of various human relationships, to foster qualities as an adult on the path to becoming professional engineers.

Masaaki Konishi Professor

©Profile: Completed the latter period of a doctoral program in applied biotechnology at the Graduate School of Engineering, Osaka University. Research interests include biochemical engineering and microbiology.



This course covers a wide range of areas related to living bodies, food and environmental protection based on chemistry and chemical engineering, and is the sole course in KIT specialized in biotechnology. Students take classes or conduct research on microbiology, which is associated with matter cycles, infectious diseases and bioindustry. They also take classes on Food and Nutritional Chemistry (which deals with the physiological functions of the digestive system, functions of nutrients and their relationships with lifestyle-related diseases) and Biochemical Engineering (which allows students to learn the basics of handling various devices related to biocatalysts). Upon graduation, the students are expected to do well at manufacturers related to biology, food, agriculture, environment and plants and facilities, engaging in research and development, manufacturing and sales of technologies. I hope students will become good human resources who can carve out a successful future by acquiring the ability to learn on their own after studying at KIT.

Faculty Interview

Be an engineer who can think, judge and make proposals, while taking on challenges through teamwork.

Fumiko Uchijima Professor

©Profile: Completed a doctoral program, majoring in materials engineering, at the Graduate School of Engineering, Kitami Institute of Technology. Research interests include enhancement of the presence of universities through Industry-Academia-Government Collaboration by such measures as evaluation of university functions, improvement in public relations, and fostering and establishing suitability at universities.



Acquire basic skills to contribute as an engineer

Professional Engineering Skills

- Research skills to develop new technologies
- Design and production skills to implement newly developed technologies

Combination of both skills

Develop leadership skills through leveraging technology

Management Skills

- Management skills to start and manage an organization
- Innovation skills to pose and solve problems
- Discussion and presentation skills

Students may naturally find it difficult to shine only with technological abilities when aspiring to do well professionally in regional cities and prefectures or major enterprises after graduating from universities. They also need to be able to manage. In this course, students learn about and develop professional engineering expertise and management abilities. Students are encouraged to be able to demonstrate their abilities to the full extent, not in engineering knowledge alone.

Curriculum

Introduction to Biotechnology and Food Science I Introduction to Biotechnology and Food Science II Organic Chemistry I Organic Chemistry II Inorganic Chemistry Chemical Engineering Biological Chemistry Microbiology Food Sanitary Food Engineering	Food Chemistry Biotechnology and Food Engineering Experiments I Biotechnology and Food Engineering Experiments II Bioinorganic Chemistry Exercise in Biotechnology and Food Engineering I Exercise in Biotechnology and Food Engineering II Biochemical Engineering Molecular Biology Food Processing and Preservation Food Macromolecules Chemistry	Life Science Scientific English for Biotechnology and Food Engineering I Scientific English for Biotechnology and Food Engineering II Practical English Natural Products Chemistry Bioorganic Chemistry Bioinformatics and Statistics Food and Nutritional Chemistry Food Functional Chemistry	Biomaterials Agricultural Machine Engineering Sports Engineering Introduction of Presentation / Outreach Biomolecular Engineering Topics in Biotechnology and Food Engineering I Topics in Biotechnology and Food Engineering II English Literature on Biotechnology and Food Engineering Presentation for Biotechnology and Food Engineering Bachelor's Thesis
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Curriculum

Regional Management Engineering I Theory of Okhotsk Industry Introduction to Industry-Academia-Government Collaboration Practical English Regional Management Engineering II Theory of Venture Business Business Administration	Engineering with Regional Support Tourism Management Engineering I Introduction to Finance Special Lectures on Business Administration Science, Technology and Society Theory of Marketing Corporate Identity	Theory of Intellectual Property Introduction of Presentation / Outreach Tourism Management Engineering II Curling Support Engineering Graduation Project on Regional Management Engineering
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Lecture

Microbiology

Microorganisms are involved in infectious diseases, matter cycles on a global scale, biotechnology industry, etc. This course offers lectures on fundamental knowledge such as physiology, genetics and metabolism of such microorganisms and utilization techniques.



Food Engineering

Food is made of proteins, carbohydrates, lipids and other nutrients. This class deals with the physiological functions of the digestive system; the digestion, absorption and transportation in human body of nutrients; and nutrient metabolism and its relation to lifestyle-related diseases.



Business Administration

It is not unusual for engineering school graduates to work in positions that involve running a business and managing employees. Students learn basic knowledge about and develop skills in corporate management and business administration.

Introduction to Industry-Academia-Government Collaboration

Industry-Academia-Government Collaboration is actively promoted as an initiative toward the betterment of society. Such collaboration involves a wide variety of activities among industry, academic organizations and local and/or national governments. Students learn about the fundamentals and basic knowledge of such cooperation.

Lecture



Humanities and Social Sciences Common Course

Engineering experts, who are engaged in research and development in a wide range of fields from infrastructure to systems directly connected to people's lives, are necessary for providing insights into social phenomena and superb skills to associate with other people, in addition to advanced knowledge and technologies.

Fostering well-rounded experts through learning about relationships between humans and society. Acquiring multifaceted points of view and superb skills to associate with other people



Graduate School

There is no end to research in science and technology. In the highly networked information society, the latest technologies and systems can be distributed in moments. In such a situation, the necessary knowledge and skills accordingly change day to day. Graduate school is a place where students can gain the latest knowledge and deepen their thoughts. Students gradually formulate and consolidate their future visions through master's and doctoral course studies.



KIT strives to foster well-rounded experts by comprehensively and systematically educating students on human beings, societies and languages.

Humanities and social sciences common course description

Liberal arts (1st year)

- Reading in English
- Spoken English
- Intensive English
- Second Foreign Language
- Physical Education
- Introductory Courses
- English Communication

Supplementary special subjects (1st, 2nd year)

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|---|--|
| ● Health Science | ● International Relations Seminar |
| ● Science, Technology and Human Society | ● World Literature |
| ● Structure and Function of Language | ● Critical Theory |
| ● Japan and Regional Political Economy | ● History of Fine Arts |
| ● International Politics | ● Popular Culture |
| ● Science and Technology Seminar | ● Appreciation of Literary Works Seminar |
| ● Health and Sports Science Seminar | ● European Culture Seminar |
| ● Modern Linguistics Seminar | ● Art and Society Seminar |
| ● Industrial Economy Seminar | ● Problems of Aesthetics Seminar |

Main features of the curriculum

The main pillars of basic education are liberal arts and supplementary, special subjects. The liberal arts subjects aim at cultivating students' basic academic ability in broad areas. The lectures include intensive language education (selection of German or Chinese for the second language subject), subjects to acquire basic knowledge about humanities and instruction on physical education. Supplementary, special subjects are aimed at cultivating advanced thinking skills, which are required of industrial engineers and researchers.

Main Lectures Introduction

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|--|-------------------------------------|
| ● Modern Linguistics Seminar | ● Introduction to Ethics |
| ● Intensive English | ● Adventures of Aesthetics |
| ● International Politics | ● Health and Sports Science Seminar |
| ● Appreciation of Literary Works Seminar | ● Spoken English II |
| ● Art and Society Seminar | |

New type of engineer

The diversification of people's values and increasingly complicated global situations are among the challenges going forward. It is indispensable for engineers to have deep insights to comprehend what is happening now to contribute to society based on their acquired technologies. The liberal arts studies include two fields: humanities and social sciences. These studies are aimed at fostering a new type of engineer equipped with skills both in engineering and human sciences as well as superb thinking skills so that KIT can realize research and education in the human sciences in a systematic and comprehensive manner.

Research

In the humanities and social sciences, research in **two fields** are conducted.

Humanities

Ethics, linguistics, research on physical education and sports, modern art theories, English and American literature, studies of Shakespeare, German literature and European cultures.

Social sciences

Research on regional sports, economic principles and Russian law.

Expectations for graduate school education

In the 4-year undergraduate program, students learn academic fundamentals and gain basic skills in each respective school. However, to respond to the complexity and sophistication of science and technology, knowledge and skills beyond those gained in undergraduate studies are necessary. To promote Japan as a science and technology-oriented nation, graduate schools are expected to send off many students trained at the graduate level, and who are internationally minded, creative and capable of problem-solving, into society.

Graduate school education and research

While emphasis in graduate education is placed on advanced classes and seminars using documents and articles in foreign languages, there is also a focus on developing presentation skills, with lessons conducted in small classes. Naturally, master's theses are important in fostering creativity and problem-solving skills, and students present their research outcomes at, for example, academic meetings or scientific societies. Companies also take notice of our human resource development, and we maintain an employment success rate of nearly 100%.

Many activities and opportunities abroad

In the graduate school, students conduct their own research in their respective special field. They have an opportunity to present their research results at various scientific societies not only in Japan, but also abroad. In addition, students are given a chance to go abroad for research to do field studies, for example. The university provides financial assistance reimbursing some of the travel expenses in such occasions. Having many contacts with partners abroad is a major feature of the graduate school.

TA and RA systems: Simulated learning, as teacher or researcher

In our "Teaching Assistant (TA) System," excellent students enrolled in the graduate school have an opportunity to assist faculty members in teaching undergraduate students, such as in experiments, practical training or seminars, with remuneration from the university. Serving as a TA allows graduate students to refresh their basic knowledge while gaining leadership and teaching experience. The "Research Assistant (RA) System" allows excellent students enrolled in a doctoral program to participate and assist in research projects, with remuneration from the university. While striving to promote research activities and the enhancement of research-related systems, graduate students can refine and improve their skills and knowledge as young researchers. Both systems provide financial support for the betterment of students' campus life.

Admission Policy of Graduate School of Engineering

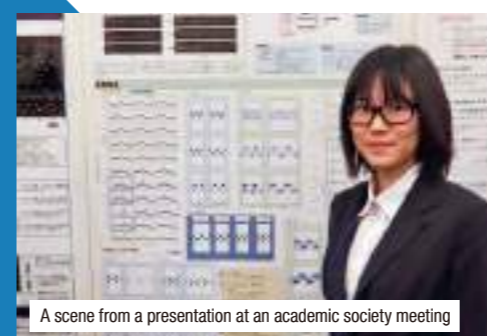
Located in the "Okhotsk region" that is blessed with a rich natural environment, Kitami Institute of Technology (KIT), with its motto "Developing Technology that Harmonizes with Nature," aims at promoting research that contributes to the development of regional and international communities. KIT strives to nurture human resources that can play an active role in society in the science and technology fields through its education and research. To achieve these goals, KIT Graduate School of Engineering seeks people with the qualities and abilities shown at right.

Master's Program

- 1 Students eager to contribute to society as specialized engineers.
- 2 Students willing to tackle problems diligently, to deeply examine and try to search for solutions tenaciously.
- 3 Students with a strong desire to promote research and acquire advanced scientific and technological skills, and who strive to achieve those goals.

Doctoral Program

- 1 Students eager to contribute to society as highly specialized engineers.
- 2 Students determined to tackle the challenge of pioneering new interdisciplinary and boundary areas and new disciplines.
- 3 Students willing to cooperate in research and development at companies and able to challenge the setup of a joint venture.
- 4 Students with a rich sense of humanity, an international perspective and with a strong interest in international exchange and international contributions.



A scene from a presentation at an academic society meeting



An underwater acoustic communication test is conducted from the surface of icy Lake Saroma in Tokorocho, Kitami City, Hokkaido.



A teaching assistant (TA) helps students during an experiment related to advanced materials engineering.