

Courses	Research Fields	Faculty	Research Topics
Mechanical Engineering	Machine Design Engineering	(Prof.) Jun-ichi SHIBANO	Study on mechanical properties of bone and biomaterials. Non-destructive evaluation of solid materials using synchrotron radiation white X-ray.
		(Assoc. Prof.) Michihiro SATO	Mechanical property evaluation of metal material and human using numerical analysis.
		(Assoc. Prof.) Yutaka YOSHIDA	Evaluation of defects in materials using electron microscope
	Thermal Energy Engineering	(Prof.) Kazuhiro HAYASHIDA	Improvement of engine combustion technology and engine performance under low temperature conditions.
		(Prof.) Takanobu YAMADA	Heat transfer, μ GT co-generation system, Formation technology for gas hydrate.
	Fluid Energy Engineering	(Prof.) Hiroyuki HANIU	Clarification of vortex formation mechanism by means of LDV and image processing. Control of Jet diffusion.
		(Assoc. Prof.) Kazunori TAKAI	Flow-Induced Vibration, Fluid-Structure Interactions.
		(Assoc. Prof.) Masanori MATSUMURA	Analysis of vortex structures and flow control in turbulent shear flows.
		(Assoc. Prof.) Yoichi MITO	Analysis of transport mechanisms in fluid turbulence using numerical simulation.
	Manufacturing Engineering	(Prof.) Sharif, ULLAH	3D Printing, Industry 4.0, Precision Machining, Sustainable Product Development
	Computational Intelligence and Biomechanical Engineering	(Prof.) Yohei HOSHINO	Study on vibration analysis and control for higher efficiency mechanical systems and application of robot technology
(Assoc. Prof.) Michiko WATANABE		Emergence on autonomous behavior and acquisition of knowledge episode for autonomous agents.	

Courses	Research Fields	Faculty	Research Topics
Civil and Environmental Engineering	Structural Engineering and Structural Materials	(Prof.) Shuichi MIKAMI	Integrity and damage evaluation on civil structures.
		(Assoc. Prof.) Masumi INOUE	Study on durability and workability of concrete.
		(Assoc. Prof.) Heesup CHOI	Study on behavior prediction and self-healing of cracks in concrete structure.
		(Assoc. Prof.) Yasunori MIYAMORI	Safety and sustainability of infrastructures.
	Geotechnical and Underground Space Engineering	(Prof.) Satoshi YAMASHITA	Evaluation of stress-strain testing of geomaterial.
		(Assoc. Prof.) Takayuki KAWAGUCHI	Geotechnical structures and ground behavior in cold regions.
		(Assoc. Prof.) Dai NAKAMURA	Study on changes in physical properties of rock due to freeze.
		(Assoc. Prof.) Shunzo KAWAJIRI	Research on Geo-disaster prevention technology considering regional conditions
	Mobility Management Engineering	(Prof.) Akira KAWAMURA	Study on evaluation of road surfaces and traffic characteristics.
		(Prof.) Kiyoshi TAKAHASHI	Evaluation of transportation project.
		(Assoc. Prof.) Kazuya TOMIYAMA	Human factor-based evaluation of transportation infrastructure
	Hydraulic Engineering	(Prof.) Hiroshi HAYAKAWA	Researches on runoff process and river geomorphology.
		(Prof.) Yasuharu WATANABE	Channel formation process and river disaster prevention.
		(Assoc. Prof.) Katsuaki KOMAI	Water and wastewater treatment. Material dynamics in water environment.
		(Assoc. Prof.) Yasuhiro YOSHIKAWA	Study on flood control, water-utilization and environment of river in cold regions.
	Glaciology and Gas Hydrate Engineering	(Prof.) Takao KAMEDA	Clarifying the mechanism relating to snow and ice (snow crystals, blowing snow and curling stone etc.), and cold temperatures in Japan and the Antarctic
		(Prof.) Akihiro HACHIKUBO	Thermal properties of snow, ice and gas hydrate.
		(Assoc. Prof.) Tatsuo SHIRAKAWA	Changes in snow and ice environments associated with climate change and its impact on transport.
		(Assoc. Prof.) Kazutaka TATEYAMA	Glaciological studies in the ice covered seas using satellite and in-situ data.
		(Assoc. Prof.) Akira HORI	Environmental conservation and physical properties of ice in cold regions.

Courses	Research Fields	Faculty	Research Topics
Electrical and Electronic Engineering	Electromagnetic Energy Engineering	(Prof.) Junji TAMURA	Design and analysis of wind energy conversion system, Analysis of power system dynamics, Analysis and control of rotating electrical machines.
		(Assoc. Prof.) Rion TAKAHASHI	Design and analysis of wind energy conversion system, Analysis of power system dynamics, Analysis and control of rotating electrical machines.
	Electric Power Systems Engineering	(Prof.) Shinya OBARA	Distributed power supply, Compound energy system, Optimal design, Operation plan.
	Electrical and Electronic Application Engineering	(Prof.) Kenji KUROKAWA	Reliability of optical fiber when exposed to high-power light for ultra high capacity optical communication
		(Prof.) Hiroyuki SHIBATA	Development of superconducting sensor and its application
		(Assoc. Prof.) Takeshi KAWAMURA	Stability analysis and synthesis for control system, Robotics, and Intelligent Transport Systems(ITS).
		(Assoc. Prof.) Yasunari HASHIMOTO	Development of brain-machine interface based on sensorimotor function in humans and its clinical application.
	Communication Engineering	(Prof.) Tatsuya KASHIWA	Numerical analysis of microwave circuits and antennas, Analysis of digital communication systems.
		(Assoc. Prof.) Kenji TAGUCHI	Study on biomedical EMC and optimal design of electromagnetic device using numerical simulation
		(Assoc. Prof.) Shingo YOSHIKAWA	VLSI Architectures for Signal Processing and Communications.
	Wave Electronics	(Prof.) Koichi HIRAYAMA	Research on numerical analysis and design of optical and microwave waveguide devices.
		(Assoc. Prof.) Takashi YASUI	Numerical analysis and design of optical waveguide devices.
	Integrated Electronics	(Prof.) Mayumi TAKEYAMA	Thin-films for electronics. LSI process engineering, physics and chemistry for metal/semiconductor interfaces.

Courses	Research Fields	Faculty	Research Topics
Computer Sciences	Intelligent System Design	(Prof.) Toshio EISAKA	Control system design and its application. Robot Informatics.
		(Prof.) Masakiyo SUZUKI	Sensor array signal processing. Design of information management systems
		(Assoc. Prof.) Ikuo SUZUKI	Emergence of information based on complex systems.
		(Lecturer) Atsushi NAKAGAKI	Digital speech processing.
	Optics and Image Science	(Prof.) Shun-ichi KAMEMARU	Study of optical computing based on methods of optical information processing.
		(Prof.) Kenji HARADA	Holographic recording using organic materials and its application.
		(Prof.) Noriaki MIURA	Development of image restoration methods.
		(Assoc. Prof.) Hiroyasu SONE	Optical information processing using optical device.
		(Assoc. Prof.) Yasuhiro HARADA	Optical instrumentation and manipulation of micro objects based on light scattering phenomena and its application.
	Smart Engineering of Knowledge Discovery and Data Mining	(Prof.) Yasunari MAEDA	Knowledge information processing and its applications.
		(Prof.) Hiroshi MASUI	Study of scientific database and application.
		(Prof.) Fumito MASUI	Natural Language Processing and its application, Curling Informatics and Tourism Informatics.
		(Assoc. Prof.) Yoshihiko HAYAKAWA	Medical 3D visualization and the application, Computer-aided detection and recognition in medical imaging.
		(Assoc. Prof.) Ptaszynski Michal Edmund	General: Natural Language Processing, Artificial Intelligence, Affective Computing, Specific: Cyberbullying Detection, Depression Detection, Affect Analysis, Ainu Language Processing
	Mathematical and Computational Science	(Prof.) Atsuro SANNAMI	Dynamical systems.
		(Prof.) Hiroshi YAMADA	Lie algebras and singularities.
		(Assoc. Prof.) Yuichi KABAYA	Hyperbolic geometry and topology.
		(Assoc. Prof.) Kazunori MATSUDA	Commutative ring theory and Combinatorics

Courses	Research Fields	Faculty	Research Topics
Biotechnology and Environmental Chemistry	Biotechnology and Food Engineering	(Prof.) Hirofumi ARAI	Suppression of allergy by food factors.
		(Prof.) Masaaki KONISHI	Investigation and application for environmental microorganisms, development of bioprocess.
		(Prof.) Takashi YOSHIDA	Chemical synthesis of polysaccharides having specific biological activity. Elucidation of structure and biological activity relationship of natural polysaccharides. Synthesis of biological dendrimers. Bioethanol. Enzymatic polymerization. Zeroemission.
		(Assoc. Prof.) Toru KANNO	Application of ceramic material to biomaterial and environmental material.
		(Assoc. Prof.) Toshitsugu SATO	Molecular breeding of edible mushrooms (shiitake mushroom etc.), and analysis of agricultural products fermented by mushrooms
		(Assoc. Prof.) Kazuyuki HATTORI	Synthesis and analysis of biomolecules, especially carbohydrates and carbohydrate polymers.
	Resource and Environment Chemistry	(Prof.) Tohru SAITOH	Development of separation methods for environmental analysis, environmental technology, and resource recovery.
		(Prof.) Masayuki HOSHI	Regio-, stereo-, and chemo-selective transformation of organic compounds.
		(Assoc. Prof.) Noriyasu OKAZAKI	Environmental catalysis
		(Assoc. Prof.) Yasumasa KANEKIYO	Design and synthesis of stimuli-responsive molecular recognition systems.
(Assoc. Prof.) Yasutaka SHIMOTORI		Stereoselective synthesis of functional organic compounds.	

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Materials Science and Engineering	Advanced Materials Chemistry	(Prof.) Hirotugu MINAMI	Development of analytical methods for the determination of trace elements in material and environmental samples.
		(Prof.) Miki MURATA	Synthesis of organoboron and - silicon compounds by transition - metal - catalyzed coupling reactions.
		(Prof.) Shinji WATANABE	Synthesis of aromatic polyester and polyether. Synthesis of polymer microsphere having mercapto groups.
		(Assoc. Prof.) Masayuki UTO	Design and development of chemical sensors mimicking biological functions.
		(Assoc. Prof.) Takeshi NAMIKOSHI	Synthesis of functional polymeric materials by living polymerization.
	Advanced Materials Engineering	(Prof.) Yoshio ABE	Formation and characterization of thin films. Electrochemical devices.
		(Prof.) Naohumi OHTSU	Development of biofunctional metallic implants for medical application, Analysis of bio/biomaterial interface reaction
		(Prof.) Tomoya OHNO	Deposition of piezoelectric thin films by Chemical Solution Deposition. Nano-coating of inorganic materials by Chemical Solution Deposition.
		(Prof.) Midori KAWAMURA	Stability of thin film structures improved by surface & interface nanolayers. Energy-saving devices.
		(Prof.) Takeshi MATSUDA	Development of catalysts for effective utilization of natural resources.
		(Assoc. Prof.) Kim Kyung Ho	Optoelectronic devices based on nanostructures.
		(Assoc. Prof.) Hiroaki FURUSE	Development of transparent laser ceramics