As of June 1, 2013

2014 Teaching Staff for the Doctoral Program (Engineering)
The Graduate School of Science and Engineering, Yamagata University

[Organic Materials Engineering]

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Field	Contents of Education and Research	Instructors
Energy Conversion Engineering	Development of heterogeneous catalysts such as immobilized enzymes and photocatalysts, and the physical properties and characteristics of those catalysts	＊Tadahiro Aita, Prof.
	Basics and applications of electron transfer reactions at solid/liquid/gas interfaces, and the impact of insertion/separation of light ions to/from non-stoichiometric compounds on their semiconductivity	＊Tatsuo Nishina, Prof.
	Design of complex processes in which thermodynamic equilibrium theory and rate theory are combined to ensure high-level control of functions and structures of materials	＊Masahiro Shishido, Assoc. Prof.
	Optimization of components design and structure of energy storage devices such as batteries or capacitors, and information management of the manufacturing technologies of those devices	＊Kazuhiro Tachibana, Assoc. Prof.
	Combustion theory as a basic knowledge of safety engineering and fire/explosion phenomena	Kazunori Kuwana, Assoc. Prof.
Organic Functional Chemistry	Molecular recognition, catalytic functions, transport, and self-organization of organic molecules and organic molecular devices	＊Kazuaki Ito, Prof.
Materials conversion and instrumentation engineering	Search, synthesis and processing of functional ceramics such as thermoelectric semiconductors and metal oxide thin films	＊Hideo Unuma, Prof.
	Physical and chemical approaches to acquire materials information, and the construction of measurement systems including high-sensitivity instruments; methods of extracting high-level functions for separated measurement and simplified measurement tools	＊Masatoshi Endo, Assoc. Prof.
	Basics and applications of the creation of "intelligent ceramics" that change their electric conductivity according to the atmosphere, or emit luminescence against external stimuli such as applied electric fields and UV irradiation.	Yuta Matsushima, Assoc. Prof.
Bioresource chemistry	Application of bioorganic chemistry to molecular recognition, analysis of enzymatic reactions, development of molecular devices, and analysis of self-organization mechanisms; and applied reaction thereof	＊Yoshihiro Ohba, Prof
	Design and synthesis of functional materials using natural resources	＊Bungo Ochiai, Prof.

Functional polymers chemistry	Molecular design and synthesis for specific photo-functions or electronic functions, and aggregation of functional chemical species through crystallization, polymerization, etc, and applications thereof	＊Shuji Okada, Prof.
	Macromonomer methods for molecular designs and characterization of structurally unique macromolecules, amphiphilic and water soluble polymers, polymeric microspheres, and their applications	＊Seigo Kawaguchi, Prof.
	Synthesis of novel materials having high-performance or multiple functions through the control of shape, the amphipathic property of polymers, and the utilization of functional molecules, and evaluation of such materials	＊Atsushi Narumi, Assoc. Prof.
Microsensor systems	Search for a novel oxide with a sensing function and development of a method for synthesizing such an oxide; and production of an oxide superconductor for magnetic sensors and evaluation of the physical properties thereof	＊Shiro Kanbe, Prof.
Materials design engineering	Materials design and synthesis of photofunction or electronic function of organic materials, including those for organic luminous devices in particular, and device development practices	＊Junji Kido, Prof.
	Construction of functional materials from monomers through polymerization or reaction of macromolecules, with the aim of using those materials for organic devices	＊Hideharu Mori, Prof.
	Design and synthesis of photo- and electro-active organic semiconductor materials and fabrication of organic light-emitting devices, organic photovoltaic cells and related devices	Hisahiro Sasabe, Assist. Prof.
Material physics	Evaluation and analysis of molecular structures and functions of polymeric materials, to create high-performance, high-functional polymers	＊Jiro Kumaki, Prof.
	Nanometer-scale evaluation and analysis of polymer structures, including those of carbon nanotubes, thin films and their surfaces	＊Masato Sano, Prof.
	Phase transition and higher-order structure of soft materials such as liquid crystals and polymeric materials; structural control by an external field; and a mechanism of function manifestation and applications thereof	＊Koichiro Yonetake, Prof. ☆
	Molecule-level analysis of the structure and manifestation mechanism of the physical properties of liquid crystals and polymeric materials, and practical applications of those properties	＊Tomonori Koda, Assoc. Prof.
Organic functional materials	Development of an innovative polymer synthesis method that enables synthesis of functional polymers including those with electric conductivity, and application thereof to electric, electronic or mechanical fields	＊Noriyuki Kuramoto, Prof. ☆
	Synthesis and functionalization of polymeric materials made from natural vegetable substances	＊Osamu Haba, Assoc. Prof.

Organic functional materials	Development of thermally stable polymers consisting of C, H, and O atoms, and application to transparent polymers, light-emitting polymers	＊Katsuya Maeyama, Assoc. Prof.
	Synthesis of organic, electrically conductive materials made from molecular conductors, and their electric and magnetic properties	Yoko Tatewaki, Assist. Prof.
Material dynamics engineering	Integrated approach to create reliable plastics, that covers materials design, process design, product design and analysis of characteristics	＊Takashi Kuriyama, Prof.
Thermal fluid engineering and transport phenomena engineering	Theory of thermal energy transfer; technologies for promoting thermal energy transfer; and fluid transport and heat transfer in a chemical process	＊Masafumi Kuriyama, Prof.
	Studies on diverse characteristics of polymeric materials to find correlation among their processibility, formability, tendency to form higher-order structures, and the manifestation of certain physical properties, with the aim of using the understanding of such correlations for the design or development of novel high-value-added polymeric materials or devices	＊Hiroshi Ito, Prof.
	Studies on the rheological behaviors of polymeric materials, with the aim of using the understanding of such behavior for effective product development to satisfy social needs, through optimization of molecular design, materials design and processing method	＊Masataka Sugimoto, Assoc. Prof.
	Flow and mixing patterns of miscible fluids in a chemical process; technologies for promoting heat transfer; control of velocity of heat transfer; and the use of a novel heating medium for heat transfer	Hideki Tokanai, Assoc. Prof.
	Materials design for diverse materials including polymeric materials made from natural resources, and understanding of their physical properties to obtain desirable processibility	＊Akihiro Nishioka, Prof.
	The transfer of materials (mass transfer) through interfaces in fluid media that occur in the course of separation operations to diffuse specific substance materials	＊Keigo Matsuda, Assoc. Prof.
Polymer functionalization engineering	Systematic analysis of similarities and differences among organic materials, inorganic materials and metals (three major materials), to find ways to realize the complex functionalization of polymeric materials	＊Tatsuhiro Takahashi, Prof.
	Analysis and estimation, mainly through theoretical approach and simulation, of the rheological properties of functional materials, including polymers in particular, with the aim of taking advantage of the identified rheological properties to achieve desirable formability in the design process	＊Junichi Takimoto, Prof.
	Analysis of the electro-chemical properties of energy storage device materials and application thereof to the development of functional materials and materials production engineering	Hideya Yoshitake, Prof.
	Development of theory and method in order to contribute to the development of advanced polymer composite material due to understand systematically the interparticle interaction of the polymer composites mixed the various particles	Tetsuo Takayama, Assist.Prof

Powder and particle materials Powder and particle materials	Analysis and process design of synthesis and surface modification of functional fine particles Mechanical operation, physical properties, and handling of powders	＊Masahiro Hasegawa, Prof. ☆ Naoya Kotake, Assist. Prof.
Polymeric Biomaterials	Design of biocompatible polymers for bio/medicine and control of cell functions	＊Masaru Tanaka Prof.
Device design	Molecular design and synthesis of novel high-performance organic semiconductors, and fundamentals and applications of the optoelectronic devices Design of organic semiconductor devices taking advantage of the physical properties and theories of organic materials, with reference to established methods of developing inorganic semiconductor devices Organic solar cells; research for materials, cell design, cell fabrication, cell measurements and device physics on organic solar cells and photovoltaic devices.	＊Shizuo Tokito, Prof. ＊Kenichi Nakayama, Assoc. Prof. Takeshi Sano Assoc. Prof
Physics of polymeric materials	Precision analysis on the structures of high-performance, durable polymeric materials with microscope or scattering techniques with quantum beams in a wide spatial range	＊Go Matsuba, Assoc. Prof.
Organic electronic materials and photo-functional materials	Molecular design, materials synthesis, device design, device production, and the evaluation of organic electronic materials and photo-functional materials, with the goal of creating organic light-emitting diodes, organic solar cells, organic transistors, etc	＊Yong-Jin Pu, Assoc. Prof.
Flexible packaging design	Polymer material design and processing for film, sheet, bottle and containers demanded in flexible packaging system	Ken Miyata, Assist. Prof.
Organic Solar Cells	Contents of Education and Research Chemical processing of novel nanostructured inorganic/organic hybrid materials and their application to solar energy conversion	＊Tsukasa Yoshida, Prof.

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[Bioengineering]

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Field	Contents of Education and Research	Instructors
Cell function analysis technology	Development of systems to analyze cellular respiration based on electrochemical measurement technology and application of novel measurement systems to analyze cell function and embryo quality in reproductive medicine	＊Hiroyuki Abe, Prof.
	Analysis of functions and developmental mechanism of germ cells using the assisted reproductive technologies, and application thereof	Yasuyuki Abe, Assist.Prof.
	Analysis of a novel lung-derived bioactive substance using cell biological and molecular biological techniques	Reiko Kurotani, Assist.Prof.
Biorobotics	Robots having flexible mechanisms and adaptive behavioral abilities similar to those of living creatures; and robotic microhands that enable micro manipulation of cells	＊Kenji Inoue, Prof.
Bioresource chemistry	Creation, through synthesis, etc., of useful natural organic compounds and novel pharmaceuticals, modeled on the biosynthesis of organic compounds of natural resources	＊Shingo Sato, Prof.
	Structures of organisms and resources derived from organisms and chemical reactions thereof; synthesis of shape-selective catalysts that enables resource conversion reaction under moderate conditions and the characteristics of such synthesis	＊Hideyuki Tagaya, Prof.
	Chemical approach to control molecules with biogenic functions, and application thereof to organic synthesis; and the development of intelligent materials	＊Tatsuro Kijima, Assoc. Prof.
Thermal fluid engineering and transport phenomena engineering	Studies on fluid mixing operations that frequently take place in the process industry. This aims to clarify flow behaviors of fluids expected to occur inside specific fluid mixing equipment, which helps establish appropriate design guidelines and optimum operation settings for the equipment	＊Koji Takahashi, Prof.
Biophysiological engineering	Analysing control mechanisms of cardiorespiratory system-from the standpoint of systems theory;development of noninvasive methods for measurements of biosignals and estimation of biological functions	＊Kyuichi Niizeki, Prof.
	Biometrics for respiratory and circulatory systems, and applied physiological analysis of biological information	Tadashi Saitoh, Assist. Prof.
X-ray imaging and information	Development of medical imaging systems using synchrotron x-ray based on novel principles, and of image processing algorithms for clinical applications	＊Tetsuya Yuasa, Prof.

Bio-materials science and engineering	Design and synthesis of biocompatible materials, and creation of tissue engineering scaffold for medical devices and regenerative medicine	＊Masaru Tanaka, Prof.
Bio-functional Improvement Science	Study on multi-discipline fields of materials science, microbiology, and regenerative medicine aiming at improving vital human body functions	＊Osamu Yamamoto, Prof.
Bioinformatics	Analysis of life information through applied soft computing	Makoto Kinouchi, Assoc. Prof.
Powder materials engineering	Preparation (through synthesis and grinding) of functional fine particles and, physical properties and handling of fine particles	Mitsumasa Kimata, Assoc. Prof.
Organic Chemistry for Life Science	Design and synthesis of organic compounds with the aim of analyzing biological phenomena, and development of pharmaceutical products	＊Hiroyuki Konno, Assoc. Prof.
Biomimetic materials	Development of sensing materials to detect bioradicals that play significant roles in the human body, and applications thereof	Rikiya Sato, Assoc. Prof.
Thermal fluid engineering and transport phenomena engineering	Physical and chemical phenomena at soft interfaces	＊Yoshimune Nonomura Assoc. Prof.
Synthetic organic chemistry	Development of new synthetic methods and reliable synthetic routes based on organometallic compounds. Optical resolution of chiral compounds using inclusion compounds	＊Bunpei Hatano, Assoc. Prof.
Biomolecular functional engineering	Analysis of the functions of motility protein, which plays the central role in the motility systems of living creatures, and application thereof to nanotechnology	＊Kuniyuki Hatori, Assoc. Prof.
Tissue engineering	Stem cells, tissue construction, and culture bioreactors for regenerative medicine and myocardial regeneration	＊Zhonggang Feng, Assoc. Prof.
Systems control and fuzzy neural network	Adaptive control, robust control and hybrid system theory General studies of high-frequency wireless communication engineering, theory of RF-CMOS IC design, and application of those state-of-the-art telecommunication technologies to biological information signal processing systems	＊Eiichi Muramatsu, Assoc. Prof. Michio Yokoyama, Assoc. Prof.
Biological measurement and image engineering	Development and application of optical sensing systems using high-performance image measurement technologies and computer applied technologies in the field of life science	＊Yuuki Watanabe Assoc. Prof.
Optical nanoscopy	Development of novel techniques in optical microscopy based on single molecule spectroscopy and super-resolution fluorescence microscopy, and their applications on biology and material science	Jun-ichi Hotta, Assoc. Prof.
Protein Engineering	Protein design and engineering for development of useful novel proteins based on recombinant gene manipulation techniques.	Koki Makabe, Assoc. Prof.
Organic functional materials chemistry	Design and synthesis of novel π-conjugated molecules and their application in optical/electronic devices and chemo-/biosensors	＊Hiroshi Katagiri, Assist. Prof.
Biofunctional materials engineering	Studies on the mechanisms of human tissues, with the aim of designing and creating materials which can be used to replace or repair hard tissues, and evaluating those materials	Takahiro Kawai, Assoc. Prof.

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[Electronics Engineering and Computer Science]

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Field	Contents of Education and Research	Instructors
Microsensor systems	Development of functional magnetic materials, development of supersensitive sensors using a magnetic thin film and a high-performance magnetic shield, and noise reduction technologies	＊Osamu Ishii, Prof.☆
Magnetic materials and device engineering	Evaluation of the magnetic properties of magnetic thin films and magnetic microparticles under nanometer-order control, and the creation of such magnetic thin films and magnetic microparticles, and application thereof to the development of novel magnetic devices	＊Nobuyuki Inaba, Prof.
	Physical properties of various magnetic materials, and control of the spin functions of magnetic materials	＊Hiroaki Kato, Prof.
	Magnetic, electric and thermal properties of intermetallic compounds of transition metals or rare earth metals	Yoshiya Adachi, Assoc. Prof.
	Magnetic properties and transport properties of the magnetic materials created through thin film processing as a nano-structure control method	Kunihiro Koike, Assoc. Prof.
Superconductive materials and device engineering	Studies and education on new superconducting devices, developing superconducting thin films, and basic theory of superconductors	＊Shigetoshi Oshima, Prof. ☆
	Studies on the phenomena of superconductivity with the aim of developing electronic devices that can use an unexploited Tera-Hertz band, and superconducting materials that can be used for such electronic devices, and applications thereof	＊Kensuke Nakajima, Prof.
	Basic studies on superconductivity and application thereof to high-performance superconducting films and high-sensitivity Josephson coupling	＊Atsushi Saito, Assoc. Prof.
	High-sensitivity measurement systems using superconducting electronics and superconducting quantum interface devices (SQUID)	Satoru Hirano, Assoc. Prof.
Computers and telecommunication systems	Protocol technologies for the Internet, local area networks, ad hoc networks and sensor networks, which is currently attracting considerable attention from researchers	＊Akio Koyama, Prof.
Mathematical and information Sciences	Approximate solution methods for partial differential equations, including the finite element method, the boundary element method, the finite difference method, and the spectral collocation method; and their applications in engineering fields	＊Atsushi Kamitani, Prof.

Mathematical and information Sciences	Analysis of pattern formation and the self-organization mechanisms of non-equilibrium systems; and studies on information dissemination in complex networks and structures thereof	Atsushi Tanaka, Assoc. Prof.
Instrumentation informatics and image engineering	Inverse analysis method and computer applied technologies for the creation of high-performance sensing systems	＊YasutakaTamura, Prof.
	Remote measurement of network characteristics, visualization of invisible information, extreme measurement exploring theoretical possibilities, and development of instrumentation methods based on informatics	＊Yukio Hiranaka, Prof.
	Computer algorithms to acquire desired information through time series signals or image data, and application thereof to medical data	＊Tadanori Fukami, Assoc. Prof.
	Studies of technologies and systems that use sound waves for non-destructive testing, and studies of commercialized signal processing technologies and image processing technologies	Hirotaka Yanagida, Assoc. Prof.
	Analysis of the perceptual information processing mechanism based on psychophysical methods, and relevant applied technologies for color science, lighting industries, image engineering, etc	＊Yasuki Yamauchi, Prof.
Optical measurement and image processing engineering	Education and research on the advanced measurement engineering and its application using functional bio-sensing technologies with optical waves and image processing technologies	＊Manabu Sato, Prof.
Audio and media information systems	Media signal processing including speech, audio (music), still images and video; coding, synthesis, recognition and processing of media signals for data transmission and storage, and its application to telecommunication systems	＊Kazuhiro Kondo, Assoc. Prof.
Optical and quantum electronics and communication engineering	Interaction between electrons and light in the low-dimensional fine structure of semiconductors such as quantum wells and fine wires, and application thereof to optical elements	＊Yutaka Takahashi, Assoc. Prof.
	High-performance optical signals processing systems using an optical waveguide; and design and technologies of optical integrated circuits based on electromagnetic computing	Katsumi Takano Assoc. Prof.
Human interfaces	Human perception, recognition and *kansei* in the course of their encounter with certain objects, environments or phenomena, and the resulting judgment, understanding and behaviors, and measurement and analysis thereof; and applications thereof in engineering fields	＊Kohei Nomoto, Prof.
Static electricity, electricity and energy engineering	External insulation of power lines exposed to thunder or snow; discharging phenomena; and generation and utilization of electrical energy	＊Yoshio Higashiyama, Prof.
	Analysis of phenomena in a high electric field including those of gas discharge, and application thereof to engineering operations such as mechanical processing and painting	Toshiyuki Sugimoto, Assoc. Prof.

Static electricity, electricity and energy engineering	Phenomena of electrification and electric conduction of liquid and solid materials, with a focus on their electrohydrodynamics and electrostatic phenomena including electrostatic chuck and ionizers; and measurement thereof	＊Kyoko Yatsuzuka, Assoc. Prof.
Semiconductor materials and device engineering	Researches and developments on high-performance photovoltaic devices with atomically controlled film interfaces	＊Fumihiko Hirose, Prof.
	Analysis of device surfaces using contact angle measurement and application to micro-bumps and MEMS, and use of ER (electrorheological) fluid for portable Braille systems	＊Koichi Matsushita, Prof.
	Theory, production, utilization and evaluation of solid-state sensors using electronic devices such as semiconductors and micro machines	Sumio Okuyama, Assoc. Prof.
	Studies on gas-solid surface reactions such as recombinative desorption from and abstraction at semiconductor surfaces, and developments on new semiconductor device based on surface science	Yuzuru Narita, Assist. Prof.
Functional electronic engineering	Generation of high-intensity ultrasound with the use of piezoelectric and magnetostrictive elements; and its industrial applications	＊Kazunari Adachi, Prof.
Mathematical brain science and recognition engineering	Natural language processing, semantic information processing, knowledge-based information processing, and discourse understanding	＊Shoichi Yokoyama, Prof. ☆
	Component technologies for human-machine communication through spoken languages and their applications to engineering fields	＊Tetsuo Kosaka, Prof.
Intelligent informatics	Error correction ability evaluation of linguistic information which is applied to sequences of linguistic units that contain errors	Takashi Otsuki, Assoc. Prof.
Applied electromagnetic field engineering	Design theory of active, nonlinear, distributed constant circuits, which can be used for the control of ultra-short electrical pulses	＊Koichi Narahara, Assoc. Prof.
High-voltage plasma engineering	Analysis and utilization of the electromagnetic phenomena and plasma phenomena that affect materials or organic cells at the time of the generation of a high-voltage, high-power ultra-short pulse or the impression of a high-voltage pulse	＊Yasushi Minamitani, Assoc. Prof.
Interaction Engineering	Automatic information processing and data analysis method for human-human and human-machine interaction	Masashi Inoue Assist. Prof.
Computational neuroscience and mathematical engineering	Research and education on the computational modeling of brain, analysis of nonlinear dynamical systems, and system optimization	Shigeru Kubota Assoc.Prof.

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[Mechanical Systems Engineering]

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Field	Contents of Education and Research	Instructors
Robotics and mechanical motion control engineering	Materials evaluation for machine elements such as belts,evaluation of new materials including metals, composite materials and carbon materials; and fracture control design	＊Hiroshi Iizuka, Prof.
	Telerobotics and virtual reality	＊Yuichi Tsumaki, Prof.
	Mechanism and control of mobile robots, and applications thereof	＊Kazuhisa Mitobe, Prof.
	Design and performance evaluation of high-performance gears through the application of intelligent engineering	Tatsuya Ohmachi, Assoc. Prof.
	Analysis of the kinetic properties of spatial link mechanisms, design of motion-transmissible mechanisms, and applications thereof	Jun Nango, Assoc. Prof.
System control and fuzzy neural systems	Design of control systems such as distributed constant systems with time delay and nonlinear systems; and analysis of the kinetic and dynamic properties of muscular motion control systems	Takao Akiyama, Assoc. Prof.
Mechanics of materials and computational materials science	Development and improvement of constitutive equations for inelastic materials subject to large deformation; applications of the constitutive equations to numerical simulations; and simulations of metal forming processes	＊Mitsutoshi Kuroda, Prof.
	Development of computational methods for estimation and evaluation of crystal structures, micro-structures, mechanical properties, deformation behaviors, and the strength of materials	＊Takuya Uehara, Assoc. Prof.
	Deformation behaviors at micro, mezzo and macro levels of solid-state materials, creation of micro-structures, and development of micro-sensor actuators	Go Murasawa, Assoc. Prof.
Advanced materials engineering	Creation of bio-compatible soft and wet materials with new functions, application of those materials to machines, optical characterization of structures and mechanisms of water-containing tissues in living organisms, and development of bio-inspired soft machines	＊Hidemitsu Furukawa, Prof.
Oscillation & wave motions and tissue engineering	Analysis of oscillation phenomena and control/active control thereof, micro biosensor technologies, and mechanics of cells and tissues	＊Tadashi Kosawada, Prof.
	Fluid flow noises; fluid-related oscillation; and oscillation and noises generated from diverse structures	M.A. Langthjem, Assoc. Prof.

Environmental Conscious Design and Manufacturing	Development and design of new products that enables the integration of cost and quality factors together with environmental considerations	＊Yasuo Kondo, Prof
Thermal-fluid engineering and transport phenomena engineering	Development of flame synthesis technologies; analysis of reaction mechanisms in the combustion field; and energy conversion technologies Analysis of thermal fluid phenomena and control of those phenomena; and micro-scale thermal fluid phenomena Studies on the heat transfer control of electroconducting and nonelectroconducting fluids by the magnetic force, the transient radiative transfer in a participating medium subjected to a pulse train, and the specific heat capacity measurement of solid.	Masaaki Okuyama, Assoc. Prof. Ichiro Kano, Assoc. Prof. Masato Akamatsu, Assoc. Prof.
Fluid systems engineering	Development of state-of-the-art intelligent fluid information processing technologies, with the aim of analyzing, from new angles, the phenomena of diverse complex flows including turbulent flows, separated flows, multiple-scale vortexes, multiphase flows, biofluids, and flows around a motor vehicle, and applications thereof Basics and applications of the interaction between vortex and flow that causes turbulent flows, as well as the interaction between vortex and flame that causes turbulent combustion Development of novel methodologies of computational fluid dynamics and applications thereof; mathematical simulation of materials transport; development of novel turbulence models; and development and application of ultrasound pumps	＊Akira Rinoshika, Prof. Masahisa Shinoda, Assoc. Prof. Tameo Nakanishi, Assoc. Prof.
Micro Nano Mechanical Engineering	Development of MEMS (Micro Electro Mechanical Systems) sensors, actuators, micro/nano robotics, and micro/nano fabrication process technologies	＊Takashi Mineta,Prof.
Smart Microstructure Engineering	Basics and applications of microstructures such as microbubbles, microcapsules, and micro/nanoparticles.	Toshinori Makuta, Assist. Prof.

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[Business administration of manufacturing technologies]

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Field	Contents of Education and Research	Instructors
Business management engineering	Methodologies concerning business management skills, corporate strategies, leadership, personnel administration, risk management and other business skills required for managers of manufacturing companies; and practical applications thereof	Yuji Nonagase, Prof.
Innovation	Innovations are essential to corporate growth and development, since companies are able to improve their profitability and competitiveness considerably through innovations. We will consider methods and in-house mechanisms that enable companies to create innovations effectively.	＊Koji Takahashi, Prof.
	Innovations are essential to corporate growth and development, since companies are able to improve their profitability and competitiveness considerably through innovations. We will consider methods and in-house mechanisms that enable companies to create innovations effectively.	＊Tsutomu Shimura, Prof.
Organic electronics engineering	Organic electronics containing the synthesis of organic materials those are key materials of organic electro luminescence, organic semiconductor and organic solar cell. Advanced research of analysis and evaluation of new materials	＊Yoshihiro Ohba, Prof.
Successful companies	Case studies of successful companies to learn their methods of effectively utilizing internal and external management resources, with the aim of identifying the keys to business success	Yuji Nonagase, Prof.
Fluid mixing engineering	Studies on fluid mixing operations that frequently take place in the process industry. This aims to clarify flow behaviors of fluids expected to occur inside specific fluid mixing equipment, which helps establish appropriate design guidelines and optimum operation settings for the equipment	＊Koji Takahashi, Prof.
Materials strength	Basic viewpoints in establishing the criteria for materials selection which is important to manufacturers; and evaluation of the mechanical properties, such as strength and durability, of novel materials	＊Hiroshi Iizuka, Prof.
Materials engineering	Functionalization of organic devices by integrating organic polymeric materials (ranging from insulating polymers to conducting polymers) with nano-carbon materials	＊Tatsuhiro Takahashi, Prof.
Management of product development	Management of product development projects (personnel management of engineers, management of suppliers, employment of international standards, etc.); and storage system devices (expansion of HDDs into new markets)	＊Naoki Kodama, Prof.
Combustion science	Measurement and analysis of chemical species in a combustion field; analysis of flame structure; and combustion control technologies	Masaaki Okuyama, Assoc. Prof.

Food functions engineering	Evaluation and control of food ingredients and their functions (nutrients, minerals, vitamins, polyphenols, etc.); and applications thereof to the development of food products	Hiroyuki Noda, Assoc. Prof.