

## The Details of Research and The Teacher Name in Charge (Schedule) of an Engineering Graduate Course

Major	Areas	Laboratories (Course)	Details of education / research fields	Staffs
<b>Mechanical System Engineering</b>	Mechanical material engineering	Composites Science and Engineering (Manufacturing Science)	Development of high reliable joint of structural materials using laser welding , laser brazing, high speed GTA welding and the various bonding methods. Development of advanced welding processes (Laser,hot wire hybrid welding, Hot wire GTAW, Friction Stir Spot Welding and so on) Development of prediction method of hot crack initiation using stress strain analysis and critical strain for cracking	Professor Kenji Shinozaki Associate professor Motomichi Yamamoto
		Property Control of Materials (Manufacturing Science)	Detailed organization control and evaluation of the quality of the material by control (3) nano-meso scale by the mechanical engineering techniques, such as control of the dynamic or control (2) thermal conditions of the material engineering quality of the material, [ by the analysis of a material process, research-and-development (1) casting using this of quality-of-the-material control technology, the alloying using the sintering method, and a diplophase and composite-izing ]	Professor Gen Sasaki Associate professor Kazuhiro Matsuki
		Net Shape Manufacturing [Joining and Sintering] (Manufacturing Science)	Granular material system : a high-speed centrifugal moulding method, microwave sintering, complicated-shaped high strength ceramics and hard metal, a highly precise iron system sintered material Plasma system : development of the solver to simulate plasma, gas, liquid, solid simultaneously. development of the application of the plasma-surface interaction. development of the method for microwave sintering.	Associate professor Nobuhiro Nishino
		Materials Physics (Manufacturing Science)	Atomic level analyses of functional materials and in situ experiments using High Resolution Transmission Electron Microscopy. Molecular dynamics simulation of atomic movements during production and growth of materials. Positron lifetime analyses of the defects of a few atomic sizes. Optimization of the crystal growth conditions by the finite element method. Materials for energy conversion. Intermetallic compounds. Quantification and its application of the structure of particle dispersed composites.	Professor (Under Consideration) Associate professor Hiroshi Fukushima
	Functional material Engineering	Strength and Fracture of Materials (Manufacturing Science)	The micescopy of the fatigue crack growth mechanism by using high-resolution microscope The evaluation of fatigue and fracture strength of advanced structural materials The modification of mechanical property of materials by coatings and surface modifications	Professor Atsushi Sugeta Associate professor Masahiko Kato

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<b>Mechanical System Engineering</b>	Power Engineering and Applied Physics	Thermal Engineering (Energy Engineering)	Chemical humidity control for air conditioning, manufacture of hydrogen from biomass using supercritical water, heat transfer and chemical reactions in supercritical water, structural analysis of a nano cluster, fundamental research of a carbon nanotube	Professor Associate professor Yukihiko Matsumura (Under Consideration)
		Reactive Gas Dynamics (Energy Engineering)	Fundamental studies of high-speed reactive gas flows such as detonations or explosions. Applied and fundamental investigations on aerospace propulsion devices using detonations or laser-produced plasmas. Development of new internal combustion engines or heat sources using high-speed combustion.	Professor Associate professor (Under Consideration) Takuma Endo
		Combustion Engineering (Energy Engineering)	Rapid flame propagation induced by vortex bursting mechanism, Characteristics of tubular flame and development of a tubular flame burner, Flame stabilization in a high-speed flow, Fire safety and science, Atomization of liquid fuels and formation of combustible mixture, Fuel spray in engine combustion, Reduction of exhaust emissions from internal combustion engines by fuel injection strategy, Laser diagnostics for combustion phenomena	Professor Associate professor Satoru Ishizuka Keiya Nishida
		Plasma Science (Energy Engineering)	Arc jet plasma for propulsion, laser propulsion, environmental application of atmospheric pressure plasma, high temperature plasma diagnostics, development and simulation of x-ray lasers, development of functional thin films and their optical and photo-electric properties.	Professor Ken Takiyama
		Quantum Energy Applicatiuons (Energy Engineering)	Measurement of gamma radiations, alfa and beta particles and environmental radioactivities. Photo excitation of short-life isomers. Monte Carlo simulation on interractions of radiations with matter. Development of Starling engine and thermoacoustic pulse-tube engine.	Professor Associate professor Kiyoshi Shizuma Satoru Endo

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<b>Mechanical System Engineering</b>	Design engineering	Mechanics of materials (Design Engineering)	Stress and strength analysis, design and evaluation of elastic mechanical structures. Stress analysis of adhesively bonded structures and nano-compositestructures. Stress analysis and functional evaluation of pressure vessels and piping under static, thermal and seismic loadings. Design and development of new structure with high collision energy absorption for automobiles by using adhesive joint and new material with high impact energy absorption based on stress analysis of crash process Multi-scale analysis of TRIP steel and tracking of moving interface with phase transformation based on level-set method.	Professor Associate professor Toshiyuki Sawa (Under Consideration)
		Machine Dynamics (Design Engineering)	Development of zero spring type 6 flexibility oscillating control device, diagnostics and condition monitoring of machine, ultrasonic wave motion application device (ultrasonic motor, focused ultrasonic device), machine sound control and sound quality evaluation, sound guidance operation, nonlinear sound, wave motion analysis, dynamic design of mechanical system, and sport engineering.	Associate professor Yasuhisa Sekiguchi
		Machine elements (Design Engineering)	Strength, failure analysis and design of gear drives. Simulation of gear vibration and noise. Development and design of a new-type gear with higher strength and performance than that of the Involute gear. Estimation and improvement of power transmission performance of gear and traction drives. Improvement in performance of gear pumps. Design and tribology of various machine elements.	Professor Kazuteru Nagamura
		Fluid engineering (Energy Engineering)	Elucidation of the flow mechanism of an important flow occurs in engineering applications. Elucidation of the hydrodynamic mechanism and interaction between fluid and bodies by unified simulation of solid, liquid and gas. Study on rarefied gas/transitional regime with the Boltzmann equation. Analysis of transition from laminar to turbulent flow for wall/free shear flows. Development of new numerical schemes.	Professor Associate professor (Under Consideration) Yoichi Ogata

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<b>Mechanical System Engineering</b>	Intelligent production Engineering	Manufacturing systems (Design Engineering)	The realization of autonomous artifacts and the collective intelligence based on the concept of autonomous distributed systems, particularly, with emerging techniques in the field of computational intelligence. Study on integrated manufacturing and intelligent scheduling systems.	Professor Kazuhiro Ohkura Associate professor Toru Eguchi
		Control Engineering (Design Engineering)	Theoretical research on robust control and nonlinear control. Research on model identification and PID tuning techniques. Application studies including motion control of mechanical systems and servo control design.	Professor Masami Saeki Associate professor Izumi Masubuchi
		Machining and Machining System (Design Engineering)	The sensing technology and the components for machine tools. Machining for the difficult-to-cut materials. Development of the free-cutting steels and the new cutting tools. Laser processing of brittle materials.	Professor Yasuo Yamane Associate professor Keiji Yamada
		Engineering Elasto-Plasticity (Manufacturing Science)	Theory of elasto-plasticity and its applications Mechanical properties of materials, and identification of material parameters Numerical simulation and process analysis of cold/hot(warm) metal forming Optimization problems in metal forming Crystal plasticity and micro mechanics	Professor Fusahito Yoshida Associate professor Ryutaro Hino

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<b>Artificial Complex Systems Engineering</b>	Fundamentals of Artificial Complex Systems	Systems Optimization (Artificial Complex Systems Design)	Research on development of most advanced system optimization methods using soft computing techniques based on fuzzy theory, probability theory, meta-heuristics, etc. and their application to real-world problems. To be more specific, multiobjective programming, fuzzy programming, stochastic programming, fuzzy random programming, high-speed and highly precise approximate optimization techniques based on evolutionary computation, tabu search and so forth.	Professor Associate professor Masatoshi Sakawa Kosuke Kato
		Information statistics (Artificial Complex Systems Design)	We study, from the mathematical statistics point of view, the random phenomenon by constructing the stochastic-model from qualitative and partial information, including a mean value, a variance, etc. Examples are the theories and applications of optimal transportation problems and stochastic optimal control problem, small random perturbations of dynamical systems, stochastic mechanics, Markov chains, stochastic differential equations, stochastic partial differential equations, and reflecting stochastic processes.	Professor Associate professor Toshio Mikami Yasumasa Saisho
		Human informatics (Artificial Complex Systems Design)	Research interest of Human Informatics Lab covers decision analysis for organizations with competitive or cooperative relationships, data analysis of business activities, modeling of artificial agents with psycho-behavioral preferences and so forth. Our researches also relate to the following disciplines: game theory, multiattribute utility analysis, simulation analysis, artificial agent modeling, network analysis, and nonlinear data analysis. We are committed to postgraduate education of working people.	Professor Associate professor Ichiro Nishizaki Hideki Katagiri
	Analysis and Synthesis of Artificial Complex Systems	Electronic Control Engineering (Applied Artificial Complex Systems)	Research and education on digital signal processing, adaptive signal processing, system control theory, adaptive control, and digital communication. Specifically, analysis and design of digital filters, synthesis and realization of digital filters, optimal design and realization of digital controllers, multidimensional system theory, and signal processing for communication.	Associate professor Shuichi Ohno
		Systems Planning (Artificial Complex Systems Design)	Research on design, planning and control techniques of large-scale, complicated manufacturing systems. Some research topics are the utilization of human capability as a fundamental element of the production system, the development of manufacturing system which adapts to the change of manufacturing environment and the simulation-based study of production systems.	Professor Associate professor Katsuhiko Takahashi Katsumi Morikawa
		Analysis of Complex Systems (Artificial Complex Systems Design)	Research on the eigenvalue problems of differential equations. Study of geometric and group theoretical aspect of differential equations.	Professor Associate professor Tetsutaro Shibata Yoshio Nishino

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<b>Artificial Complex Systems Engineering</b>	Applied artificial Complex Systems	Power System Engineering (Applied Artificial Complex Systems)	Research mainly concerned with large-scale, complex and nonlinear electric power systems, including problems of operation and planning, deregulation of power industry, distributed power generation, microgrid, optimization technique, control system design, artificial intelligence application, analysis technology, algorithm development, etc.	Professor Naoto Yorino Associate professor Yoshifumi Zoka
		Biological Systems Engineering (Applied Artificial Complex Systems)	The main subject of research is the measurement, analysis and modeling of biological functions with its engineering applications. The research area covers human motion analysis, bioelectric signal processing, welfare robotics, artificial life, soft computing, electric circuit design and medical electronics engineering, etc.	Professor Toshio Tsuji Associate professor Kenji Shiba
		Modeling and Its Application (Applied Artificial Complex Systems)	Research on the modeling and application of a complicated phenomenon. For example, physical sensor and integration of sensor system information, formation technology of the new structure for the solid surface and an interface, measurement and diagnosis for the living body information and system integration, engineering application, etc.	Professor Naohiro Ueno Professor Tetsuo Kado Associate professor Osamu Fukuda
	Cybernetics	Robotics (Applied Artificial Complex Systems)	Research on hyper-human robotics technology exceeding man's capability, and its applications. For example, high-speed robot vision, parallel sensor information processing, high-speed robot control, multimedia applications, industrial applications, medical applications, bio-applications, etc.	Professor Idaku Ishii Associate professor (Under Consideration)

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<b>Information Engineering</b>	Computer System Engineering	Computer Architecture (Computer and Communication System)	Research on architectures and algorithmic techniques for new computation and network environments such as programmable logic devices, network of workstations, ad-hoc networks, and sensor networks.	Professor Koji Nakano
		System Software Engineering (Computer and Communication System)	Theory and practice on parallel and distributed systems, which include high-performance computing using PC clusters, development of automated parallelizing compiler for parallel computing systems, information sharing in fully distributed systems such as peer-to-peer, and efficient contents delivery in scale-free networks.	Professor Satoshi Fujita
		Algorithm Engineering (Computer and Communication System)	Design and analysis of algorithms Development of Web systems Printed circuit board and VLSI design Parallel / distributed algorithms Graph and combinational theories	Professor Toshimasa Watanabe
		Mathematical Foundation for Information Sciences (Computer and Communication System)	Theory of qualitative properties of solutions of parabolic and elliptic partial differential equations describing various diffusion phenomena. Computer algebra and its applications to mathematical physics. Theory of Solitons.	Professor Associate professor Shigeru Sakaguchi Masaaki Ito
	Knowledge Information Engineering	Intelligent Systems and Modeling (Mathematical Information Science)	Researches on computer graphics, image processing, visualization, image recognition and understanding, computer vision, and various applications of these technologies.	Professor Associate professor Kazufumi Kaneda Toru Tamaki
		Database Systems (Mathematical Information Science)	Design and development of interactive system based on knowledge engineering, learning science and multimedia processing technology. In particular, eLearning Intelligent Tutoring System, Web Navigation, Semantic Web and Realworld-oriented Interface.	Professor Associate professor Tsukasa Hirashima Hideo Funaoi
		Information Epistemology and Computation (Mathematical Information Science)	Theoretical studies on future computing systems and computational complexity. In particular, automata and complexity theory, cellular automata, computing models and algorithms, formal languages, reversible logic circuits, and reversible computing.	Professor Associate professor Ken-ichi Morita Chuzo Iwamoto
		Applied Discrete Mathematics (Mathematical Information Science)	Education of the mathematics as the foundation in engineering. The formation of a mathematical form and algebraic analysis of modification, application to an inverse problem. Education and research on arithmetic geometry, and application and algebra (especially an algebraic coding theory, a public key cryptosystem, computer algebra).	Professor Associate professor Fujio Kubo Hiroyuki Ito

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<b>Information Engineering</b>	Software Reliability engineering	Systems Reliability Engineering (Mathematical Information Science)	Dependable computing, Fault tolerant computing, Computer security, Software reliability assessment, Performance evaluation, Reliability and Maintenance, Applied probability, Applied statistics, Operations research, Stochastic modeling	Professor Tadashi Dohi Associate professor Hiroyuki Okamura
	Communication Informatics	Media Graphics (Computer and Communication System)	Graphics applications, interactive graphics design methods, computational geometry, intelligent graphics data input, visual programming, real time processing for multimedia, embedded media software.	Professor Koichi Harada Associate professor Jun-ichi Miyao
		Spatial informatics (Computer and Communication System)	Pattern recognition in spatial information, Medical image analysis and automatic diagnosis, Theoretical research on spatial information description, Visual kansei engineering	Professor Akira Asano
		Analysis in Mathematical Science (Mathematical Information Science)	I study the theory of stochastic processes, especially focus my interest on the processes going around fractals. I also study the spectral analysis of the generators associated with the stochastic processes on fractals.	Associate professor Tadashi Shima Associate professor (Under Consideration)
		Information Planning and Design (Mathematical Information Science)	A part is analyzed with construction of designs of experiment, such as an enforcement factor plan. Large-scale information processing required for data mining, information retrieval, etc., and data management centering on the applied technology.	Professor Masahide Kuwada Associate professor Yasuhiko Morimoto

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<b>Chemistry and Chemical Engineering</b>	Chemical Engineering	Thermal-fluid Engineering (Chemical Engineering)	Researches on the production of functional fine- and nano-particles and thin films using aerosol and liquid process and the evaluation of related phenomena such as of fluid, heat transfer, chemical reaction of the gas-liquid, mass transfer inside the reactor, nucleation/growth, clean technology, and self-healing coatings	Professor Associate professor Kikuo Okuyama Akihiro Yabuki
		Chemical Engineering Thermodynamics (Chemical Engineering)	Measurement and modeling of the equilibrium and transport properties for supercritical fluid + polymer systems. Development of innovative material processing technology and functional organic and inorganic materials utilizing particular characteristics of supercritical fluids.	Professor Associate professor Shigeki Takishima Shin-ichi Kihara
		Polymer Technology (Chemical Engineering)	Physical chemistry of polymer gel. Development of separation system using stimulus responsive polymers or polymer gels. Research on the structure controlling method of polymer gel. Development of a highly efficient functional polymer and analysis of reaction using polymer.	Professor Associate professor Shuji Sakohara Takashi Iizawa
		Separation and Purification Technology (Chemical Engineering)	Development and characterization of nano- or subnano-porous ceramic membranes, and their application to gas separation, pervaporation / vapor permeation, nanofiltration / reverse osmotic processes, and catalytic membrane reactors. Molecular simulation of permeation and separation for microporous membranes.	Professor Associate professor Toshinori Tsuru Tomohisa Yoshioka
		Fine Particle Technology (Chemical Engineering)	Simulation and experimental study on classification of particle by centrifugal separator, development of dry and wet type cyclones, control of particle cut size using electrical force and droplet mist spray, utilization of microwave for particle reaction system, and effective use and recycling of ashes.	Professor Associate professor Hideto Yoshida Kunihiro Fukui
		Equipment Materials Engineering (Chemical Engineering)	Education and research on the modeling and evaluation of preparation and contamination processes of micro-controlled materials surfaces by gasborne matter, the development of risk assessment techniques for nanomaterials, and on the plant maintenance introduced by the characteristics, degradation process, risk management, life prediction of various component materials and environmental and economical benefits.	Professor Associate professor Manabu Shimada Yoshinori Isomoto

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<b>Chemistry and Chemical Engineering</b>	Applied Chemistry	Applied Organic Chemistry (Applied Chemistry)	Education and research on development of new organic functional materials aiming at applications to optoelectronic devices, such as organic light emitting diodes (OLED), organic field-effect transistors (OFET), and organic photovoltaic cells are conducted. For these purpose, emphases are placed on molecular design strategy, organic syntheses, physicochemical measurements, theoretical calculations, and device fabrications and evaluations.	Professor Kazuo Takimiya
		Organic Materials Chemistry (Applied Chemistry)	Education and research on organosilicon compounds, in particular synthesis of polysilane derivatives containing $\pi$ -conjugated systems and their applications to organic electronic materials, and development of novel organic synthetic strategy directed to synthesis of functional-materials.	Professor Associate professor Joji Ohshita Hiroto Yoshida
		Functional Polymer Chemistry (Applied Chemistry)	Education and research on polymer chemistry and carbon materials, especially, precision polymerization catalyzed by transition metal complex, precise synthesis and application of active carbons from polymeric materials, and development of new polymers from renewable biomass.	Professor Associate professor Associate professor Takeshi Shiono Hisashi Tamai Yuushou Nakayama
		Energy Chemistry (Applied Chemistry)	Our research area is the development of new synthetic reactions and reagents that can be used for the highly selective and environmentally benign transformation of various organic compounds. Particularly, heterofunctionalization of carbon-carbon multiple bonds with early and late transition metal catalysts and photochemical carbon-carbon bond formation with Lewis acids are currently under investigation.	Professor Ken Takaki
		Analytical Chemistry (Applied Chemistry)	Education and research on analytical chemistry, especially, development and application of new methods in separation analysis and x-ray spectroscopy.	Professor Associate professor Takeshi Hirokawa Shinjiro Hayakawa
		Materials Physical Chemistry (Applied Chemistry)	Education and research on new functions of organic/inorganic materials and their applications to novel electronic/optoelectronic devices	Professor Associate professor Yutaka Harima Ichiro Imae
		Applied Inorganic Chemistry (Applied Chemistry)	Research and education on ceramics, with main interests on molecular design, synthesis, characterization, and applications of new inorganic materials having functional nano-structures.	Professor Associate professor Shoji Yamanaka Kei Inumaru
	Green Chemistry	Catalyst Chemistry (Green Chemistry)	Synthesis of inorganic microporous and mesoporous materials such as zeolites and related materials, and their application to catalysts and adsorbents in environmental and energy research fields.	Professor Associate professor Tsuneji Sano (Under Consideration)
		Green Process Engineering (Green Chemistry)	Education and research on treatment of waste and wastewater, green processes for preservation and restoration of the environment, and investigation of environmental impacts of the human activities and its reduction by greenization of chemical processes.	Professor Associate professor Mitsumasa Okada Satoshi Nakai

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<b>Social and Environmental Engineering</b>	Civil and Structural Engineering	Structural Materials and Concrete Structures (Structual Engineering)	Education and research on the physicochemical characteristics of cementitious materials, the mechanical and durability performance evaluation of plain, reinforced and prestressed concretes, effective utilization of resources, environmental impact evaluation of concrete, and maintenance of concrete structures.	Professor Ryoichi Sato Associate professor Kenji Kawai
		Structural Engineering (Structual Engineering)	Education and research on performance-based design on steel and composite structures, earthquake and wind resistance design and vibration control, natural disaster prevention, remaining strength of aged deteriorated existing steel structures, maintenance and asset management of bridges, and various computer simulation technologies.	Professor (Under Consideration) Associate professor Katashi Fujii
		Geotechnical Engineering (Structual Engineering)	Evaluation of mechanical property of soft ground, Development of gound improvement methods, Development of new geo-materials including lightweight treated soil of recycled materials, Research on geotechnical problems related to environmental rehabilitation in coastal areas, Development of new construction technology for waste disposal sites, In-situ testing of weathered granite soil and the application on risk assessment of natural slopes in heavy rainfall, Estimation and countermeasures of sand liquefaction by earthquakes, Evaluation of seismic site response of ground, Earthquake resistant design of geotechnical works.	Professor Takashi Tsuchida Associate professor Koji Ichii
	Global Environmental Engineering	Infrastructure and Transportation planning (Environmental Engineering)	Development of the analysis / planning technique for regional infrastructure by making full use of a economical diagnosis, a statistical model, and a mathematical planning, or a travel behavior model. Research on the longitudinal change in national city-system and inter-city traffic caused by the latest information technology especially, and research on the robust network system at the time of disaster.	Associate professor Makoto Tsukai
		Environmental Preservation Engineering (Environmental Engineering)	Biological wastewater treatment. Energy recovery from biomass by microbes. Nitrogen and Phosphorous removal . Microbial community analysis. Analysis and modelling of behavior of trace toxic chemicals in air and water environments. Application of membrane filtration technique on wastewater treatment.	Professor Akiyoshi Ohashi Associate professor Noriatsu Ozaki
		Hydraulic engineering (Environmental Engineering)	Research on flood flow structures and sediment transport in rivers Development of laser scanner technology for river environment measurement Development of scour depth sensors for steep slope rivers Development of an integrated inundation model for urban areas Development of a distributed hydrological model for urbanized watershed management	Professor Yoshihisa Kawahara

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<b>Social and Environmental Engineering</b>	Global Environmental Engineering	Coastal Engineering (Environmental Engineering)	Research interests are concerned with: Turbulent flow structures and sediment transport in estuaries; Motion of suspended particle such as sediment, oil droplet and bubble in turbulence; Intertidal flat hydrodynamics and sedimentation-erosion dynamics; New measurement technique for rate of discharge in river and estuaries; meteorological and oceanographic phenomena; current field in the Seto Inland Sea; current structure and quantitative analysis of seawater exchange in enclosed bay; decomposition of organic matter, and fluid mud dynamic in estuary	Associate professor Kiyoshi Kawanishi Associate professor Tadashi Hibino
		Logistics Systems (Environmental Engineering)	Study on the logistics systems in an Asian area. Development of a new inland transportation system. Study on a high speed marine vehicle. Study on a simulation method of water performance of ships.	Professor Hironori Yasukawa Associate professor Susumu Tanaka
		Environmental fluid engineering (Environmental Engineering)	Computational modeling by use of large eddy simulation for vehicle development, Research on the reduction of wind resistance acting on a bridge of ship, Characteristics of hydrodynamic flow around ship and numerical prediction of hydrodynamic loads using CFD, Research on water transport based on a flexible water container, Research on assive/active stall control of aerofoil, Research on flapping wing with elastic deformation toward developing micro robot, CFD techniques for analysis of fluid-structure interaction, Environmental assessment and prediction using ocean/atmosphere model	Professor Yasuaki Doi Associate professor Hidemi Mutsuda
		Ocean space engineering (Environmental Engineering)	Research on the aerodynamic properties of WIG flying over the waves, Research on the passive control of the wind turbine with elastic composit material, Research on the human-powered aircraft, Research on the theoretical estimation of the seakeeping of high-speed ship, Research on the remote sensing of marine environment	Professor Hidetsugu Iwashita
		Ocean-Atmosphere Environment (Environmental Engineering)	Monitoring of coastal environmental variations and the construction of the prediction system of environmental variations, Application and prevailance of coastal acoustic tomography system (CATS), International cooperative research on the measurement of the Kuroshio and strait throughflow in the Luzon Strait, Long-term environmental variations of the Japanese coatsl seas caused by the Kuroshio, Sea level variations around Japan, Studies on tidal mixing and fronts, Studies on Kuroshio frontal waves and branching	Professor Arata Kaneko

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<b>Social and Environmental Engineering</b>	Structural Systems Engineering	Structural systems (Structural Engineering)	Development of structure-related nonlinear simulation method (buckling, instability, structure-fluid interaction, collision, material nonlinearity) Ultimate strength and safety assessment of structure Structural reliability of ships and offshore structure	Associate professor    Shigenobu Okazawa	
		Design and Production Systems (Structural Engineering)	Computational methods for structure analyses in design process. Optimization methods for large scale design problems. Optimal design of vehicles such as ships, aircrafts, trains and automobiles. Weight minimization of human power aircraft. Shape and structure optimizations of wing for human power aircraft	Professor                    Mitsuru Kitamura	
		System Safety (Structural Engineering)	Research on the development of sheet type sensors for dynamic load measurement, impact force measurement, deformation measurement, stress measurement, and structural monitoring. Structural reliability analysis and inspection planning of aging structures. Automatic control and planning of ship equipments and systems. Study on analysis for electromagnetic and structural coupled problem.	Professor Associate professor    Yukio Fujimoto Eiji Shintaku	
	Building Engineering		Structural Mechanics (Human Environmental Design)	Applying technologies of RFID for the building life-cycle support, durability design for reinforced concrete buildings, repairing method for buildings, materials and components for sustainable buildings, seismic reinforcement for modern houses, plastic collapse behavior analysis of structures and/or structural elements, development of the structural analysis method for the traditional timber building structures, blasting-demolition analysis of the steel frame structures and the plastic collapse behavior of the steel structures under repeated variable loading.	Professor Associate professor    Takaaki Okubo Kazuo Kondo
			Building Structures (Human Environmental Design)	Remaining strength and deformation capacity of corroded steel beams and connections, Upgrading of steel anchor bolts of the exposed-type column base in the existing old steel building structures, Minimum cost design of steel building structures considering fabrication cost, and Strength and deformation capacity of steel beam-to-column connections.	Professor                    Akira Matsuo
			Building Disaster Prevention Engineering (Human Environmental Design)	Research on dynamic soil structure interaction, Research on site amplification of earthquake motion, Research on seismic resistance evaluation of buildings, Research on site effects evaluation based on observed microtremors, and Research on underground structures modelling.	Professor Associate professor    Kenji Miura Tatsuo Kanno
			Earthquake and Structural Engineering (Human Environmental Design)	Damage investigations of the RC buildings during the major earthquake, the seismic performance of the low strength concrete, the mechanical characteristics of the concrete containing waste material such as coal ash and construction sludge, the development of the retrofitting and strengthening methods for the existing RC buildings.	Associate professor    Hideo Araki

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		Urban and Building Environmental Science (Human Environmental Design)	The planning of regional water environment, The efficient use of energy in buildings, The evaluation techniques for regional living environment and landscape, and The problems concerning with human behavior and/or environmental psychology.	Professor Associate professor Daisaku Nishina (Under Consideration)
		Architectural History and Design Theory (Human Environmental Design)	Theory on architecture and urban design, environment and landscape design. History of architecture and town of Japan and World. Research and planning for the conservation of buildings and towns. CG simulation of historic architecture and town.	Professor Associate professor Toshimasa Sugimoto Shoichiro Sendai
		Architectural Project (Human Environmental Design)	Theoretical research of architectural design method and theoretical projection. Research on architectural space as information. Research on urban space. Construction the design method which present-day society and technical progress demand though critical analysis of the design method of modern architecture.	Associate Professor Mitsugu Okagawa
	Environmental System Engineering	Environmental System Engineering (Environmental Engineering)	Development of the information system to support the decision making on design, planning and operation activities in consideration of the human factor, technical system and environment.	Professor Associate professor (Under Consideration) Kunihiro Hamada