

## Technological Directory - Graduate School and Faculty of Engineering (2020)

### Department of Mechanical Engineering

Discipline	Field	Expertise	Keyword 1	Keyword 2	Keyword 3	Open to consultations on	Lab	Researcher	Related researchers
Engineering	Mechanical engineering	Production engineering and processing studies	(E) Machine tools	(L) Precision positioning, processing measurement	(G) Cutting and grinding	Processing methods and programming for improved processing accuracy on multi-axis machine tools Feed motion accuracy improvement technologies and thermal deformation prevention technologies aimed at improved processing accuracy	Precision Engineering Lab	Yukitoshi IHARA, Professor	
Engineering	Mechanical engineering	Machine materials, material mechanics	Mathematical analysis of elasticity	Functionally graded materials	Piezoelectric ceramics	Piezothermoelastic fracture behavior of functionally graded piezoelectric ceramics	Materials Design Engineering Lab	Sei UEDA, Professor	
Engineering	Mechanical engineering	Thermal engineering	Heat engines	Ignition and combustion	Fuels and fuel additives	Automotive powertrain technologies Ignition and combustion control technologies Ignition and combustion modeling Fuel and fuel additive technologies	Internal Combustion Engine Lab	Kazunari KUWAHARA, Professor	
Engineering	Mechanical engineering	Machine materials, material mechanics	Fatigue and damage	Ceramics	Materials design, process, physicality and evaluation	Fatigue strength of new materials, fatigue fracture mechanisms, non-contact strain and deformation measurement	Advanced Experimental Mechanics Lab	Izuru NISHIKAWA, Professor	
Engineering	Materials engineering	Materials Processing engineering	Twin roll casting	Strip casting	Lowering costs	Roll casting of aluminum alloys and magnesium alloys	Materials Processing Lab	Toshio HAGA, Professor	
Engineering	Mechanical engineering	Mechanical engineering and science	Multiscale & Multiphysics analysis	Fine element analysis	First-principles calculation	Material design, development and characterization	Functional Materials Engineering Lab	Yasutomo UETSUJI, Professor	
Engineering	Mechanical engineering	Control engineering and robotics	Control theory	Robotics	Motion control	Analysis and synthesis of robust control systems, bipedal robots, robot arm motion control technology, image processing, modeling and control of radio-controlled helicopters	Cybernetic Intelligence Lab	Shun USHIDA, Professor	
Engineering	Mechanical engineering	Thermal engineering	Thermophysical properties	Measurement techniques	Heat transfer	Thermophysical properties of fiber reinforced composites and functional graded materials/method to measure their properties/heat transfer	Heat Transfer Lab	Eiji MATSUSHIMA, Associate Professor	
Engineering	Mechanical engineering	Vibration engineering, acoustical engineering, kansei (affective) engineering	Vibration	Acoustics	Subjective evaluation	Vibration and noise improvement, contribution analysis, and sound quality analysis for vehicle, home appliances and other products	Sound and Vibration Lab	Junji YOSHIDA, Professor	
Engineering	Mechanical engineering	Materials Joining Engineering	Residual Stress	Joint strength	Spot welding	Evaluation of joint strength and residual stress in Welded joint	Materials Joining Engineering Lab	Muneyoshi IYOTA, Assistant Professor	
Engineering	Mechanical engineering	Control engineering, System engineering	System design	Control method	Signal analysis	Design and analysis of control systems, robotics and signal processing	System Design Lab	Tomoaki HASHIMOTO, Associate Professor	

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Engineering	Mechanical engineering	Fluid dynamics, Fluid machinery	Turbomachinery	Design optimization	CFD (Computational Fluid Dynamics)	Prediction and optimization of turbomachinery (Pump, Fan, Compressor, Wind Turbine, Gas and Steam Turbine) design. Countermeasure of cavitation, surge and flow instability.	Fluid Machinery Lab	Masahiro Miyabe, Professor	
Engineering	Mechanical engineering	Compressible fluid dynamics, Optical engineering	Flow control	Flow visualization	Shock wave	Development of quantitative flow visualization techniques. State-of-the-art active and passive flow control concepts.	Flow Control Lab	Takahiro UKAI, Assistant Professor	
Engineering	Mechanical engineering	Microfluidics Biomedical engineering	Microfluidics	Microfluidic device	Micro-TAS (Micro-Total Analysis Systems: $\mu$ -TAS)	Analysis of small scale flows and design of novel microfluidic devices with applications in flow control, Micro-TAS and Bio-MEMS.	Microfluidics Lab	Sho YOKOYAMA, Assistant Professor	
Engineering	Mechanical engineering	Welfare Engineering, Mechatronics, Robotics mechanism	Welfare Device	Mechatronics	Rehabilitaion Robotics	Development of welfare devices, rehabilitaion systems and care robotics	Movement Assistance Systems Lab	Makoto HARAGUCHI, Assistant Professor	