

Themes of Individual Research Training (2014–2015)

Followings are the themes performed in 2014–2015. The theme will be decided at the start of Individual Research Training.

Graduate School	Department	Research Theme	Academic Advisor
Faculty of Science	Mathematics	Congruence, Fermat’s Little Theorem and Euler’s Formula	Prof. YAMAZAKI Takao
	Physics	Phase and amplitude pulse shaping with spatial light modulators	Prof. YOSHIZAWA Masayuki
		X-ray Flat Panel Sensor with Annealing	Prof. MAEDA Kazushige
		Study of Higgs coupling to electron by energy scan at the International Linear Collider	Prof. YAMAMOTO Hitoshi
	Biology	Rho-GEF Solo regulates epithelial collective migration via adhesion complex protein plakoglobin	Prof. MIZUNO Kensaku
		Invasive alien crayfish Procambarus clarkii affects species composition of fresh-water invertebrate community	Prof. CHIBA Satoshi
		Identification by molecular methods of the origin of the Hemigrapsus takanoi population currently invading the European coast	Prof. URABE Jotaro
		Cloning of AtXTH2, a member of the xyloglucan endotransferase/hydrolase (XTH) family of Arabidopsis thaliana	Prof. NISHITANI Kazuhiko
		Furry is a Critical Protein regulating the Phosphorylation of YAP in the Hippo Pathway	Prof. MIZUNO Kensaku
	Chemistry	Study on the interaction between a pteridine derivative and DNA duplexes	Prof. NISHIZAWA Seiichi
		Synthesis of Functionalized Catechol Compounds for Solar Photocatalysis	Prof. ASAO Naoki
		Time of Flight Analysis in Neon5000 Clusters	Prof. UEDA Kiyoshi
		Development of Brønsted Base-Catalysed Ring-Opening Reaction of α-Diethylphosphono-α,β-epoxy Esters	Prof. TERADA Masahiro
	Mechanical and Aerospace Engineering	SilicaAerogel&Biomaterial	Prof. MATSUBARA Hideaki
		PEDOT/pTS Silk Thread as Biocompatible Flexible Electrode	Prof. NISHIZAWA Matsuhiko
		Optimization of Aircraft Wing	Prof. OKABE Tomonaga
		Water Lubrication for Environmentally-Friendly Mechanical System	Prof. ADACHI Koshi
		Magnetic Suspension Balance System and Molecular Robotics	Prof. ASAI Keisuke
		Numerical Modeling and Simulation of Plasma Chemical Reactions around a Bubble for Water Treatment	Prof. NISHIYAMA Hideya
		Designing an Autonomous Quadcopter for Indoor Navigation	Prof. YOSHIDA Kazuya

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School of Engineering		Male-type Dance Robot for Human-Robot Interaction	Prof. KOSUGE Kazuhiro
		Differentiating Elasticity of Layered Elastic Solids Utilizing Air Jets	Prof. TANAKA Mami
		The Development of an Experimental Scanning MEMS Mirror Setup	Prof. HANE Kazuhiro
		Computer Vision in Bridge Inspection Robotics	Prof. TADOKORO Satoshi
		Effect of Walking Speed and Turning Angle on Required Coefficient of Friction While Turning	Prof. HOKKIRIGAWA Kazuo
		Numerical Analysis of Flow Stream Across a NACA0012 Airfoil Using Reynolds Averaged Navier Stokes Simulation	Prof. SAWADA Keisuke
		Study of the Behavior of a Funnel Shape Vortex	Prof. FUKUNISHI Yu
		TEMPERATURE SENSOR BASED ON VOX	Prof. ONO Takahito
		Reducing Motion Sickness in a Virtual Reality Environment by Object Tracking via OpenCV	Prof. HASHIMOTO Koichi
		Research Topic: Observation of Bubble Induced by Pulse Laser	Prof. SOYAMA Hitoshi
		Terrain Detection and Classification for the Moonraker Rover	Prof. YOSHIDA Kazuya
		Performance Optimization of the Heatstroke Simulation on SX-ACE	Prof. KOBAYASHI Hiroaki
		Real-time photoelectron spectroscopy study of the oxidation reaction kinetics on p-type and n-type Si (001) surfaces	Prof. TAKAKUWA Yuji
	Information and Intelligent Systems	Real Time Motion Capture System Using Resonated Wireless Markers	Prof. ISHIYAMA Kazushi
		Study on a Narrow Linewidth DFB LD and LD-Based Injection Locking Circuit	Assistant Prof. KASAI Keisuke
		K-Means Clustering for Collaborative Filtering	Prof. KAWAMATA Masayuki
		Intelligent Home Security System Using Agent-based IoT Devices	Prof. KINOSHITA Tetsuo
		Fundamentals of Mobile Communications	Prof. ADACHI Fumiyuki
		Conversion of Photonic Frequencies to Wireless Broadband Using Graphene-Channel Transistors and InP-Based High Electron Mobility Transistors	Prof. OTSUJI Taiichi
		Polarization State Tomography of Photons	Prof. EDAMATSU Keiichi

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		Functional C	Prof. SUMII Eijirou
		Development of a Hybrid-Battery System with Raspberry Pi	Prof. YAMADA Hirohito
		Estimation of Power Consumption of PCs Utilizing Network Information	Prof. SUGANUMA Takuo
		Performance comparison between Android Runtime and Dalvik virtual machine	Prof. SHINOHARA Ayumi
		Earth Worm Robot with TEGOTAE based Control	Prof. ISHIGURO Akio
		Vocabulary-Classification of Letter-Combinations using Artificial Neural Networks	Prof. TANAKA Kazuyuki
		Enhancing SML# database capabilities	Prof. OHORI Atsushi
		Increasing bandwidth of ultrasound radio frequency echoes using Wiener filter	Prof. KANAI Hiroshi
		Use of Support Vector Machine for 3D Gesture Recognition	Prof. KITAMURA Yoshifumi
		Simplified Processor Pipeline Design	Prof. AOKI Takafumi
		Data Extraction from Portable Document Format	Prof. SUMII Eijirou
		Game Engine Evaluation for City Management Software	Prof. SUGANUMA Takuo
	Applied Chemistry, Chemical Engineering and Biomolecular Engineering	Biodiesel production from acid oil and ethanol using cation-exchange resin catalyst	Assoc. Prof. KITAKAWA Naon
		Ultrasonic Synthesis Of Chromium Nanoparticles	Assoc. Prof. HAYASHI Yamato
		Sonochemical Synthesis of Chromium Nanoparticles	Assoc. Prof. HAYASHI Yamato
	Materials Science and Engineering	The Effect of Titanium Oxide as an Intermediate Layer on the Interfacial Resistance of Solid State Batteries using Lithium Borohydride	Prof. TAKAMURA Hitoshi
		Magnesium Removal in Al-Mg Remelting Process Under Argon gas using Al ₂ O ₃ Ceramic Filter	Prof. NAGASAKA Tetsuya
		Formation of a novel Mn-SiOCH dielectric film for LSI interconnection	Prof. KOIKE Junichi
		Experimental study on heat-input during friction stir welding of AA2024	Prof. KOKAWA Hiroyuki
		Self-assembled microsphere of PDMAA-poly(sulfobetaine) block copolymers	Prof. SUZUKI Makoto

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	Civil Engineering and Architecture	Effect of Viscous Damper Capacity on the Seismic Response of a Bridge with Reinforced Concrete Columns	Prof. SUZUKI Motoyuki
		Simulation of salinization in coastal aquifers of the Phuket Island in Thailand	Prof. KAZAMA So
		PRE- AND POST-TSUNAMI MORPHOLOGY CHANGES ON KODANOHAMA BEACH	Prof. TANAKA Hitoshi
		Study of Torii in Videogames Ōkami – PS2, PS3, Wii	Prof. IGARASHI Taro
		The tools of reconstruction after natural disasters The model of the fight against Tsunami and Earthquake	Assoc. Prof. UBAURA Michio
		The Use of Recycled Debris as Aggregate in Concrete	Prof. HISADA Makoto
Faculty of Agriculture	Applied Bio-Sciences	Does the movement of Omphalius rusticus differ with the size of the shell?	Assoc. Prof. AOKI Masakazu
		Adipocyte Differentiation	Assoc. Prof. ROH Sanggun
		Growth Comparison between Local and Non-Local Seedlings of Machilus thunbergii for Restoration Planting in Miyagi Prefecture Coastal Forests Damaged by Tsunami	Assoc. Prof. SUYAMA Yoshihisa
		Study on the effectiveness of selection concerning reproductive traits of the pig	Prof. SUZUKI Keiichi
		A Study of Game Design and UI as Perceived by Different Countries	Assoc. Prof. KITANI Shinobu
	Applied Biological Chemistry	Effect of Acid Exposure on Thermal Inactivation of Escherichia.coli in Laboratory Media	Prof. FUJII Tomoyuki
		Preparation of Par14 Knockout-Cells Using CRISPR/Cas9 System	Prof. UCHIDA Takafumi
		Using CRISPRCas9 Technology to Understand the Role of Pin1 in the Formation and Proliferation of Cancerous Cells	Prof. UCHIDA Takafumi