

Faculty Members and Research Fields **(Doctoral Program)**

Material, Structural and Energy Engineering Course

Processing Development Engineering

Professors:

Castro, Juan Jose: Ph.D., Tsukuba University, 1994
Seismic and Wind Engineering for Buildings Structures, Foundation Engineering,
Reinforced Concrete Structures, Urban Disaster Mitigation.
E-mail: castro@tec.u-ryukyu.ac.jp

Higa, Akira: D. Eng., Osaka University, 1996
Thin Film Engineering, Carbon Materials, Solid State Electronics.
E-mail: higa@eee.u-ryukyu.ac.jp

Maehira, Takahiro: D. Sc., Niigata University, 2000
Condensed matter physics, Electronic structure and the Fermi surface of actinide and rare-
earth compounds (Theoretical Physics).
E-mail: maehira@sci.u-ryukyu.ac.jp

Miyazaki, Tatsujiro: Dr. Eng., Kyushu University, 2003
Strength of Materials, Interface Mechanics, Metal Fatigue.
E-mail: t-miya@tec.u-ryukyu.ac.jp

Nakada, Kozo: Dr. Eng., University of the Ryukyus, 2008
Structural Engineering, Reinforced Concrete Structures
E-mail: k-nakada@tec.u-ryukyu.ac.jp

Oshikawa, Wataru: Dr. Eng., The University of Tokyo, 2005
Corrosion and Corrosion Protection
E-mail: oshikawa@tec.u-ryukyu.ac.jp

Shibata, Shinichi: Dr. Eng., Niigata University, 1999
Composite materials, Bio materials.
E-mail: shibata@tec.u-ryukyu.ac.jp

Shimozato, Tetsuhiro: Dr. Eng., University of the Ryukyus, 2008
Structural Engineering, Steel-structural Engineering, Bridge Design and Maintenance.
E-mail: simozato@tec.u-ryukyu.ac.jp

Tomiyama, Jun: Dr. Eng., University of the Ryukyus, 2000
Computational Mechanics, Concrete Materials, Concrete Engineering.
E-mail: jun-t@tec.u-ryukyu.ac.jp

Yamada, Yoshitomo: Dr. Eng., Utsunomiya University, 2000
Construction Materials (Buildings), Concrete Engineering, Fresh Concrete Rheology.
E-mail: b985553@tec.u-ryukyu.ac.jp

Yonesu, Akira: D. Sc., Kyushu University, 1989
Plasma Engineering
E-mail: yonesu@eee.u-ryukyu.ac.jp

Associate Professors:

Kondou, Ryouji: Dr. Eng., Okayama University, 2003

Theory of Plasticity, Theory of Crystal Plasticity, Theory of Dislocations.

E-mail: kondou@teada.tec.u-ryukyu.ac.jp

Tahara, Shuta: Dr. Sc., Kyushu University, 2011

Condensed matter physics, structure and physical properties of disordered materials (Experimental and Computational Physics).

E-mail: tahara@sci.u-ryukyu.ac.jp

Energy Development Engineering

Professors:

Aso, Naofumi: D. Sc., Tohoku University, 1997

Solid state physics, magnetism and superconductivity of strongly correlated electron systems studied by neutron scattering and magnetic and transport measurements (Experimental Physics).

E-mail: aso@sci.u-ryukyu.ac.jp

Hedo, Masato: D. Sc., Osaka University, 1998

Solid state physics, magnetic and transport properties in multiple extreme conditions on the strongly correlated electron systems (Experimental Physics).

E-mail: hedo@phys.u-ryukyu.ac.jp

Senaha, Izuru: Dr. Eng., Nagoya University, 2001

Thermal Engineering, Heat Transfer Engineering, Fluid Dynamics.

E-mail: senaha@tec.u-ryukyu.ac.jp

Urasaki, Naomitsu: Dr. Eng., University of the Ryukyus, 2004

Electric Machinery, Motor Drives, Power Electronics.

E-mail: urasaki@tec.u-ryukyu.ac.jp

Yaga, Minoru: Dr. Eng., Kyushu University, 1989

Impingement Heat Transfer, Under Expanded Jet, Compressible Flow.

E-mail: yaga@tec.u-ryukyu.ac.jp

Associate Professors:

Matsubara, Hitoshi: Dr. Eng., University of the Ryukyus, 2005

Geosphere Engineering, Computational engineering and science.

E-mail: matsbara@tec.u-ryukyu.ac.jp

Yasuda, Chitoshi: D. Sc., Tokyo University of Science, 1998

Condensed matter physics, especially theory of magnetism and the randomness effects (Theoretical Physics).

E-mail: cyasuda@phys.u-ryukyu.ac.jp

Yogi, Mamoru: D. Sc., Osaka University, 2004

Solid state physics, especially NMR and NQR on the strongly correlated electron systems (Experimental Physics).

E-mail: myogi@sci.u-ryukyu.ac.jp

Interdisciplinary Intelligent Systems Engineering Course

Environment and Information Engineering

Professors:

Ando, Tetsuya: Dr. Eng., The University of Tokyo, 1992
Urban and Regional Planning, Civil Engineering.
E-mail: tando@tec.u-ryukyu.ac.jp

Nakamura, Morikazu: Dr. Eng., Osaka University, 1995
Mathematical Systems Science, Computational Intelligence, Parallel and Distributed Systems.
E-mail: morikazu@ie.u-ryukyu.ac.jp

Okazaki, Takeo: Dr. Eng., University of the Ryukyus, 2014
Mathematical statistics, Data science, Bioinformatics, Social behavior analysis.
E-mail: okazaki@ie.u-ryukyu.ac.jp

Shiina, Ryosuke: D.Sc., Tokyo University of Science, 1995
Condensed matter theory, especially electron correlations in solids.
E-mail: shiina@sci.u-ryukyu.ac.jp

Shimizu, Hajime: Dr. Eng., Kyoto University, 1994
Urban Planning, City Planning, Rural Area Planning, Housing Planning, Community Environment, Housing Policy.
E-mail: shimizu@tec.u-ryukyu.ac.jp

Uryu, Koji: Ph.D., The University of Tokyo, 1995
Astrophysics, General Relativity, Relativistic Astrophysics, and Gravitational Wave Astronomy.
E-mail: uryu@sci.u-ryukyu.ac.jp

Yamada, Koji: Dr. Eng., Hokkaido University, 1995
Complex Systems, Intelligent Robotics, Artificial life, Evolutional Computation.
E-mail: koji@ie.u-ryukyu.ac.jp

Associate Professors:

Ono, Hiroko: Ph.D., Tsukuba University, 2003
Urban Planning, Ecological Land Use Planning, Land scape, Watershed Based Planning, Community Planning, Urban Politics.
E-mail: hono@tec.u-ryukyu.ac.jp

Taniguchi, Keisuke: D. Sc., Kyoto University, 1999
Astrophysics, General Relativity, Relativistic Astrophysics, and Gravitational Wave Astronomy.
E-mail: ktngc@sci.u-ryukyu.ac.jp

Electronics and Information Engineering

Professors:

Endo, Satoshi: Dr. Eng., Hokkaido University, 1995
Artificial Intelligence, Neural Networks, Intelligent Systems, Adaptive Algorithms, Machine Learning.
E-mail: endo@ie.u-ryukyu.ac.jp

Higa, Hiroki: Dr. Eng., Tohoku University, 1997
Biomedical systems, Assistive devices, Bioinstrumentation.
E-mail: hrhiga@eee.u-ryukyu.ac.jp

Nagata, Yasunori: Dr. Eng., Meiji University, 1996
Fault tolerant systems, Asynchronous systems, Multiple-valued logic, Embedded systems.
E-mail: ngt@eee.u-ryukyu.ac.jp

Oda, Ichiro: Ph.D., Chiba University, 1990
Theoretical physics, elementary particle physics, especially, superstring theories, quantum gravity and topological field theories.
E-mail: ioda@phys.u-ryukyu.ac.jp

Senju, Tomonobu: Dr. Eng., Nagoya University, 1994
Power Electronics, Electronic Machine, Power System Engineering, Intelligent Control Engineering, Renewable Energy Engineering, System Optimization.
E-mail: b985542@tec.u-ryukyu.ac.jp
URL: <http://sm1001.skr.u-ryukyu.ac.jp/>

Wada, Tomohisa: Dr. Eng., Osaka University, 1994
Digital Communication System Design, VLSI System Design, Digital Design, HDLs, Electronic Design Automation.
E-mail: wada@ie.u-ryukyu.ac.jp

Associate Professors:

Yanagisawa, Susumu: Dr. Eng., The University of Tokyo, 2004
Theoretical solid-state physics, Surface Science, Molecular Science.
E-mail: shou@sci.u-ryukyu.ac.jp

Nagata, Tomokazu: Ph.D.(Eng.), University of the Ryukyus, 2003
Information Network, Internet Architecture, Computer System, Network Security, Internet of Things(IoT) and Whole technology about IT.
E-mail: nagayan@ie.u-ryukyu.ac.jp

Nagayama, Itaru: Ph.D. (Eng.), The University of Tokushima, 1994
Neural Networks, Adaptive Signal Processing, Computer Vision, Data Mining Systems.
E-mail: nagayama@ie.u-ryukyu.ac.jp

Subject Descriptions

Material, Structural and Energy Engineering Course

Processing Development Engineering

Materials for Sustainable Engineering (Oshikawa, W.)

This lecture focuses on corrosion degradation of materials under various environments.

Special Topics in Manufacturing Process (Shibata, S.)

This lecture focuses the analysis and design of polymer composites materials in manufacturing system.

Advanced Computational Mechanics (Kondou, R.)

This lecture focuses on analyses based on FEM and physics-based model for elastoplastic deformation and dislocation.

Advanced Material Function Development of New Construction Material (Yamada, Y.)

This lecture focuses on durability of concrete and rheology of fresh concrete.

Advanced Reinforced Concrete Structures (Nakada, K.)

Confined Concrete, Flexural strength, Shear resistance mechanism, Collapse mechanism.

Advanced Electronic Functional Materials (Higa, A.)

Semiconductor, Amorphous Materials, Processing of Thin Films.

Advanced Plasma Engineering (Yonesu, A.)

Plasma processing, Nuclear fusion.

Organic Electronics Device Engineering (Kageyama, H.)

Lectures on properties of organic electronics materials and physics of organic electronics devices

Advanced Ferromagnetic Materials (Yamamoto, K.)

Ferromagnetic Materials, Domain Theory, Magnetization Process.

Topics on Ferroelectric Crystals (Fukami, T.)

Lecture on structural phase transitions of ferroelectric and superionic crystals

Quantum Physics of Materials (Maehira, T.)

The students will study the basic electron theory in solids

Advanced Physics of Disordered Materials (Tahara S.)

Lecture on structure and physical properties of liquid and amorphous materials.

Energy Development Engineering

Advanced Heat Transfer Engineering (Senaha, I.)

Advanced lecture on heat and mass transfer by turbulent flow of a forced convection or a conduction phenomena.

Advanced Study on Transport Phenomena (Nosoko, T.)

Advanced analysis of heat transfer and mass transfer, Modeling of heat and mass transfer Phenomena.

Heat Transfer Augmentation (Nosoko, T. / Senaha, I.)

This lecture focuses on the theory of thermal energy transfer. Moreover, heat and mass transfer augmentation technique in convective flow are discussed.

Advanced Fluid Dynamics (Yaga, M.)

Lecture on the concept of high speed gas flow and shock waves using the governing equation of fluid dynamics and thermodynamics.

Advanced Energy Conversion (Yaga, M.)

Study on the mechanism of heat transfer between high speed flow and impinged plate using experimental and numerical technique.

Advanced Wind Engineering for Building Structures (Castro, J. J.)

This course focuses on the fundamental concepts for the design of wind proof structures. Studying of expected wind velocity return period, wind pressures and forces on structures.

Advanced Coastal Engineering on Coral Seas (Nakaza, E.)

Dynamics of non-linear waves, Deformation of waves on coral reefs, Surf beat and other long period waves, Coastal stabilization, Design of maritime structures and coastal resort areas, Ecosystems in tropical seas and coasts.

Advanced Control of Electric Power Energy (Urasaki, N.)

Conversion and the control method of the electric power energy using the power electronics technology.

Strongly-Correlated Materials Science (Aso, N.)

Fundamentals and applications of strongly-correlated materials science are introduced using English textbooks.

Properties of Condensed Matter under Multiple-Extreme Conditions (Hedo, M.)

Overview of transport, magnetic and thermal properties in heavy fermion system around quantum critical point, and introduction of methods of obtaining low temperatures and high pressures

Magnetism in Condensed Matter Physics (Yasuda, C.)

Lecture on magnetism and phase transition in quantum spin systems

Advanced Magnetic Resonance in Solids (Yogi, M.)

Advanced lecture on NMR and NQR spectroscopy for strongly correlated electron systems.

Departmental Curriculum

Dissertation I on Material, Structural and Energy Engineering

Dissertation II on Material, Structural and Energy Engineering

Special Field Works

Special Educational Training

Internship I & II

Interdisciplinary Intelligent Systems Engineering Course

Environment and Information Engineering

Advanced Sustainable Regional Development (Ando, T.)

Under developing countries, Sustainable development, Appropriate technology.

Advanced Theory of Community Living Space Planning (Shimizu, H.)

Theory of urban planning and regional planning with a point of view of social space systems. Theory investigation through case study. Development process and characteristic of community space in Okinawa as a case study of relationship between local culture and regional living space.

Advanced Urban and Regional Planning System (Ono, H.)

Urban and regional planning system is for learning the planning systems, existing systems, analysis method on each case in several countries. If necessary, we will compare and analyze overseas urban planning and legal systems and actual conditions.

Advanced Acoustic Architectural Design (Tokashiki, T.)

Room acoustics, Reverberation times, Auditorium, Road traffic noise, Absorption coefficient, Insulation ability

Advanced Regional Planning Systems and Methodology (Kamiya, D.)

Planning systems and methodology on environmental creation, disaster risk management and traffic management considering regional characteristics are illustrated and discussed in the class.

Advanced Wave Signal Processing (Fujii, S.)

Imaging of invisible information with wave signal, Holographic imaging in acoustic and radio waves, Synthetic aperture radar.

Advanced Parallel and Distributed Systems (Nakamura, M.)

Parallel machine architecture, Design and verification of parallel and distributed algorithms.

Advanced Emergent and Intelligent Robotics (Yamada, K.)

Emergent Computation, Evolutionary Computation, Multi Agent System, Collective Intelligence and Swarm Intelligence for Robotics.

Advanced Mathematical Modeling (Okazaki, T.)

Advanced lecture on mathematical statistics, computational statistics, data science, bio science and human behavior modeling.

Advanced Software Systems (Kono, S.)

Software system development, Large program, Object oriented systems, Persistent object, Verification, Test.

Advanced Information Network Theory (Nagata, T.)

This lecture focuses on advanced technology required for the information network systems such as a routing protocol and switching technology.

Advanced Image Processing (Nagayama, I.)

Digital Image Processing, Cognitive Science, Machine Learning, Social Application, Smart System.

Introduction to Numerical Relativity (Uryu, K.)

A course for studying methods for numerically solving Einstein's equation coupled with the equations for relativistic fluid. Numerical relativity is a tool to analyze spacetime dynamics and relativistic astrophysical phenomena.

Physics of Correlated Electrons (Shiina, R.)

Theoretical understandings on new phenomena of correlated electrons in solid states are lectured.

Introduction to the Structure of Space-time (Taniguchi, K.)

Advanced general relativity and the structure of space-time

Electronics and Information Engineering

Advanced Adaptive Systems (Kinjo, H.)

Advanced lecture on adaptive methods: Fuzzy systems, Neural networks, Genetic algorithms.

Advanced Intelligent Control Systems (Senjyu, T.)

Optimization algorithm, Neural network, Fuzzy control, Nonlinear control, Intelligent system.

Advanced Asynchronous Systems (Nagata, Y.)

Asynchronous circuit design, Asynchronous micro-chip, Delay models, Field programmable gate array, Micro-pipeline.

Advanced Biomedical Engineering (Higa, H.)

Bioinstrumentation, Assistive technology, Functional Electrical Stimulation, EEG signal processing.

Advanced Computer Control Theory (Nagado, T.)

Conversion method of models, Descriptive method of models, Controlling apparatus, Method of decreasing dimension.

Advanced Intelligent Systems (Endo, S.)

Advanced lecture on multi-agent systems. Chaotic systems and evolutionary computation techniques. Design and development of complexity intelligent systems are also discussed.

Advanced System Architecture (Wada, T.)

Large Digital Signal Processing System Design with Electronic Design Automation tools.

Advanced Machine Learning (Kang, D.)

This lecture describes basic concepts in machine learning and data mining, and then introduces examples of applications.

Introduction to Superstring Theory (Oda, I.)

Lecture on superstring theory from the elementary level to the more advanced level.

Advanced Electronic Properties of Molecular Solids (Yanagisawa, S.)

I focus on advanced electronic structure methods for properties of organic solids: from density functional theory to many-body electronic structure theory.

Departmental Curriculum

Dissertation I on Interdisciplinary Intelligent Systems Engineering

Dissertation II on Interdisciplinary Intelligent Systems Engineering

Special Field Works

Special Educational Training