

GUIDE FOR THE APPLICATION OF THE NON - SCHOLARSHIP
ASIA-PACIFIC ENGINEERING DESIGN PROGRAM
IN THE INTERNATIONAL PRIORITY GRADUATE PROGRAM (PGP),
GRADUATE SCHOOL OF ENGINEERING AND SCIENCE, UNIVERSITY OF THE RYUKYUS
(DOCTORAL PROGRAM)

ABOUT THE PROGRAM

Asia-Pacific Engineering Design Program is organized in order to offer a better opportunity for graduate study particularly to the students from abroad by (1) instructing all the courses in the English language, and (2) commencing the academic program in October. *

This is a call for application to a three year Doctoral Course for the academic year 2012-2015.

Upon enrollment, the candidates will each be assigned to an advisor who will direct their thesis research for three years in the designated field of specialization. The degree of Doctor of Engineering / Philosophy will be awarded in recognition of thesis research and course work including seminar participation, with a minimum of 12 credit hours.

Before deciding the field and the topic of research, applicants are encouraged and recommended to contact appropriate supervisor(s) appearing in the List of Faculty Members.

*This program is also open to applicants who hold Japanese citizenship.

GUIDELINES FOR APPLICATION

1. Study Areas and Number of International Students for Admission

A total of a few student will be accepted for enrollment under the Asia-Pacific Engineering Design Program, Graduate School of Engineering and Science, University of the Ryukyus.

2. Qualifications Required for Applicants

- (1) Prospective applicants are advised to get in touch with a potential thesis advisor at the University of the Ryukyus for consultation on research themes and plan; applicants without advisor's such prior approval may not receive full consideration during the admission screening.
- (2) Nationality: Open to applicants of all nationalities
- (3) Academic career: Applicants for the Graduate Program leading to a Doctoral Degree should have or be receiving a Master's Degree or an equivalent degree, as of March 31, 2012.
- (4) Health: Applicants should be in good mental and physical health.
- (5) Language proficiency: A good working level of English is required.
- (6) Time limit for arrival in Japan: Overseas candidates should be able to arrive in Japan at the end of March, 2012.

3. Expenses

- (1) Entrance Examination Fee: 30,000 yen
- (2) Admission Fee: 282,000 yen
- (3) Tuition Fee: A total of 535,800 yen for one year, to be paid in April and October in two divided installments.

4. Selection and Admission

Applicants will be examined by the Screening Committee of the Program. Only those who have a solid academic background, research capability and commitment are selected. The final decision will be informed to the candidates through the University of the Ryukyus around the middle of January, 2012.

5. Enrollment

Date of enrollment is April 1, 2012.

6. Application

Applicants should prepare the following documents to be forwarded to the Graduate School of Engineering and Science, University of the Ryukyus through the head of the universities or the institutions with which the applicants are affiliated. Applicants who presently have no formal affiliation should send the prepared documents through the Dean / Director of the University from which they graduated.

- (1) Application form (Form I-1, I-2)
- (2) Health certificate in the prescribed form completed by a registered medical doctor within six months of the date of the application (Form)
- (3) Certificate of Graduation (undergraduate and graduate) or Certified Letter from the Graduate School at which the applicant is currently enrolled, stating the expected graduation date.
- (4) Transcripts of academic record (undergraduate and graduate) issued by the university authorities and their English translation.

A GRADE POINT AVERAGE (GPA) must be issued by the university authorities.

$$\text{GPA} = \frac{(\text{A course credits} \times 4\text{points}) + (\text{B course credits} \times 3\text{points}) + (\text{C course credits} \times 2\text{points}) + (\text{D course credits} \times 1\text{point})}{\text{Total Credits Registered}}$$

Grading Scale

A	••••• Excellent (90-100)	4 Grade Points
B	••••• Good (80-89)	3 Grade Points
C	••••• Average (70-79)	2 Grade Points
D	••••• Passing (60-69)	1 Grade Point
F	••••• Failure (0-59)	0 Grade Point

- (5) Certificate of Citizenship or Proof of Residence in applicant's home country.
- (6) A letter of recommendation (Form) from the head of the applicant's affiliated institution addressed to the Director of Graduate School of Engineering and Science. Letter(s) of reference from those who know the applicant's research / study should be capability addressed also to the Director of Graduate School of Engineering and Science.
- (7) Three photographs (hatless portrait), 6 cm × 4 cm in size, taken within six months of the application date. One copy should be attached to the application form. Two extra copies should be enclosed therein, with the applicant's name and the nationality on the reverse side of the copies.
- (8) AN OFFICIAL TOEFL SCORE of 550 (Paper Based Test Score) / 213 (Computer Based Test Score) / 79-80 (Internet-based Test Score) or above for applicants whose instructional language at their home institution is NOT ENGLISH (Take proper procedure of sending your OFFICIAL score report through the Educational Testing Service to the Graduate School of Engineering and Science, University of the Ryukyus / TOEFL CODE No.8872). Certificate indicating the medium instruction is English issued by the university authorities for applicants whose instructional language at their home institutions is English.
- (9) An abstract of the Master's thesis or project.
- (10) Guarantee (Form)
- (11) Entrance Examination fee of 30,000 yen.

Remarks:

- 1) The above documents of A4 size paper should be written in English on the supplied forms typewritten or in print.
- 2) Applications will not be considered if any of the above documents are incomplete, incorrect, or lacking supporting evidence, nor will they be considered if they arrive after the deadline.

- 3) The letters of reference and recommendation should indicate the English proficiency of applicants as excellent, good, or fair.
- 4) All the submitted documents will be retained and not be returned to the applicant.
- 5) The information for documents mentioned in paragraphs (1), (2), (6) and (10) above must be written on the forms provided. Only the originals are accepted.
- 6) All documents are to be prepared in English. For those who cannot prepare in English, a separate English translation should be attached.

7. Application Deadline

Documents for application should be submitted to the Academic Affairs Unit (Faculty of Engineering), Graduate School of Engineering and Science, University of the Ryukyus by November 30, 2011.

8. Other Notes

- (1) Successful applicants are expected to study and understand the geography, climate, customs and habits of Okinawa as well as the general features and conditions of the University of the Ryukyus. It must be noted that English is not normally spoken among the majority of people in Okinawa.
- (2) The International House may be available for accommodation at reasonable cost, if there are vacancies.
- (3) The areas of research conducted by the faculties, and curricula of the Graduate Program are outlined in the following section.
- (4) Accepted students are recommended to be well acquainted with the Japanese language, culture, and customs. Knowledge of the Japanese language is necessary in daily life.
- (5) Applicants who will receive the Master's Degree from the Special Master's Program in Asia-Pacific Engineering Design Program, Graduate School of Engineering and Science, University of the Ryukyus as of March 31, 2012 can apply for the Special Doctoral Program, Graduate School of Engineering and Science, University of the Ryukyus.

Important

The application must be sent by registered air mail by the head of the affiliated institution or employing body on behalf of the applicant.

All the correspondence related to this application should be addressed to:

Academic Affairs Unit (Faculty of Engineering), Graduate School of Engineering and Science,
University of the Ryukyus
1 Senbaru, Nishihara-cho, Okinawa 903-0213, Japan.

Faculty and Research Fields

Material, Structural and Energy Engineering Course

Processing Development Engineering

Professors:

Arizumi, Yasunori : Dr. Eng., Nagoya University, 1984.

Structural Engineering, Steel-structural Engineering, Structural Analysis, Structural Stability.

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

Fukumoto, Isao : Dr. Eng., Osaka University, 1986.

Manufacturing Process, Injection Molding, Composite Materials.

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

Furukawa, Toshio: Dr. Eng., Osaka Prefecture University, 1983.

Solid Mechanics, Theory of Elasticity, Computational Mechanics.

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

Higa, Akira : Dr. Eng., Osaka University, 1996.

Thin Film Engineering, Carbon Materials, Solid State Electronics

E-mail: higa@eee.u-ryukyu.ac.jp

Makabe, Chobin : Dr. Eng., Kyushu University, 1985.

Fatigue Fracture Mechanics, Fracture Dynamics, Fracture Mechanics of Materials, Fatigue Strength of Metals.

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

Noguchi, Takashi : Dr. Eng., Doshisya University, 1992.

TFT (Thin Film Transistor), LCD (Liquid Crystal Display), FPD (Flat Panel Display), mobile-phone, KEITAL, SoG (System on Glass), New Solar Cell, Active matrix, Polysilicon, Amorphous laser crystallization silicon mobility, O-LED (Organic LED).

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

Saitou, Masatoshi : Dr. Eng., Waseda University, 1993.

Theory of Crystal Growth.

Fractal in Crystal Growth, Electrodeposition, Computer Simulation.

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

Shibata, Shinichi: Dr. Eng., Niigata University, 1999

Composite materials, Bio materials

E-mail: shibata@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

E-mail: yamakawa@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

Miyazaki, Tatsujiro: Dr. Eng., Kyushu University, 2003
Strength of Materials, Metal Fatigue.
E-mail: t-miya@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

Energy Development Engineering

Professors:

Kaneko, Eiji : Dr. Eng., Nagoya University, 1989.
High Power and High Voltage Engineering, Power System Engineering, Pulsed Power Engineering, Electrical Discharges and Plasma Engineering.
E-mail: kaneko@eee.u-ryukyu.ac.jp

Nakaza, Eizo: Dr. Eng., Tokyo Institute of Technology, 1990.
Coastal Engineering, Integrated Coastal Zone Management, Coastal Zone Ecosystem, Coral Sea Engineering, Waves and Currents in Coral seas, Internal Waves, Design of Maritime Structures, Fluid dynamics, Elasticity.

Nosoko, Takehiro : Dr. Eng., Keio University, 1986.
Wave Dynamics on Falling Film, Mass Transfer into Film Flow, Solar Desalination, Drying.
E-mail: yongrang@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:

Urasaki, Naomitsu : Dr. Eng., University of the Ryukyus, 2004
Electric Machinery, Motor Drives, Power Electronics
E-mail: urasaki@tec.u-ryukyu.ac.jp

Interdisciplinary Intelligent Systems Engineering Course

Environment and Information Engineering

Professors:

Fujii, Satoshi : Ph.D., Hokkaido University, 2000.
Rader Signal Processing, Remote Sensing, Radio Oceanography.
E-mail: fujii@eee.u-ryukyu.ac.jp

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

Ogura, Nobuyuki : Ph.D., Tokyo University of Fine Arts and Music, 1988.
Architectural Design and Planning, History of Tropical Modern Architecture.
E-mail: oguranob@tec.u-ryukyu.ac.jp

Takara, Tomio : Dr. Eng., Tokyo Institute of Technology, 1983.
Pattern Information Processing, Spoken Language Processing, Speech Analysis, Synthesis
and Recognition, Artificial Intelligence.
E-mail: takara@ie.u-ryukyu.ac.jp

Tsutsumi, Jun-ichiro : Dr. Eng., Kyushu University, 1987.
Urban and Architectural Environmental Engineering, Computational Fluid Dynamics,
Architectural and Urban Energy Planning, Urban Thermal Environmental Engineering,
Environmental Fluid Engineering, Urban Meteorology, ecological House.
E-mail: jzutsumi@tec.u-ryukyu.ac.jp

Associate Professors:

Matsui, Toru: Ph.D., University of Tsukuba, 1990
Applied Microbiology, Biochemical Engineering.
E-mail: tmatsui@comb.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

Electronics and Information Engineering

Professors:

Asharif, Mohammad Reza : Dr. Eng., University of Tokyo, 1981.
Digital Signal Processing, Digital Image Processing, Acoustic Signal Processing,
Simulation Engineering, Active Noise Canceling, Double Talk Echo Canceling, Image
Compression, Model-Based Image Coding, Speech Processing, Image Processing, Neural
Networks, Statistical Signal Processing, Digital Communications, OFDM, BSS, ICA, LPC.
E-mail: asharif@ie.u-ryukyu.ac.jp

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

Kinjo, Hiroshi : Dr. Eng., Tokushima University, 1994.
Control Engineering, Signal Processing, Intelligent Systems.
E-mail: kinjo@tec.u-ryukyu.ac.jp

Kurata, Koji: Dr. Eng., The University of Tokyo, 1995.
Mathematical Engineering, Neural Networks, Self-Organization

E-mail: kurata@mibai.tec.u-ryukyu.ac.jp

Miyagi, Hayao : Dr. Eng., University of Osaka Prefecture, 1978.
Intelligent Control Engineering, Fuzzy Expert Systems, Decision-making Modeling.
E-mail: miyagi@ie.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

Namihira, Yoshinori : Dr. Eng., Tohoku University, 1979.
Optical Fiber and Component Measurement Technologies, Optimum Design of Optical
Fibers, Optical Fiber Transmission Systems, Photonic Crystal Fibers for Medical
Applications.
E-mail: namihira@eee.u-ryukyu.ac.jp

Senjyu, 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://pesc.eee.u-ryukyu.ac.jp/>

Tamaki, Shiro : Dr. Eng., Osaka University, 1987.
Control Engineering, Robust Control of Heat Transfer System, Optimal Design of Power
Generation System Using Natural Energy.
E-mail: shiro@ie.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

Subject Descriptions

Material, Structural and Energy Engineering Course

Processing Development Engineering

Advanced Steel Structures (Arizumi, Y.)
Structural engineering, Geometrical non-linearity, Material non-linearity, Structural stability.

Advanced Ferromagnetic Materials (Yamamoto, K.)
Ferromagnetic Materials, Domain Theory, Magnetization Process.

Special Topics of in Strength of Materials I, (Makabe, C.)
Students investigate some special topics about fatigue strength of the industrial materials. After that,
they have to summarize about these. Investigated topics.

Advanced Theory of Crystal Growth (Saitou, M.)
The specific phenomena to be lectured are scaling, anomalous dimensions, BCF theory and fractal
concepts in crystal growth.

Topics on Organic Material (Kimura, M.)
Studies on the structure and properties of functional polymer alloys: relations among the chemical

and higher structures of polymers and opto-electrical properties and processing of polymer alloys, interactions between polymers and inorganic materials, environmental influence of those materials.

Advanced Semiconductor Materials (Maehama, T.)

Porous silicon, Superlattice, Photonic crystals.

Advanced Studies on Strength of Reinforced Concrete Structures (Morishita, Y.)

Reinforced concrete, Steel reinforced concrete, Seismic safety, Strength, Ductility.

Advanced Development of Construction Material (Yamada, Y.)

Penetration of chloride ions, Estimation of environmental conditions, Rheology of concrete.

Composite Material Processing (Fukumoto, I.)

Application of ultra precision processing for ceramics material, Estimation of mechanical strength on composite material.

Advanced Plasma Engineering (Yonesu, A.)

Plasma processing, Nuclear fusion.

Advanced Electronic Functional Materials (Higa, A.)

Semiconductor, Amorphous Materials, Processing of Thin Films.

Thin-film Semiconductor Device Technology (Noguchi, T.)

The import of TFT device and its application for LCD is described based on new topics.

Advanced Numerical Stress Analysis (Furukawa, T.)

Numerical stress analysis of the body under mechanical / thermal loading is discussed by use of boundary element method.

Energy Development Engineering

Advanced Study on Transport Phenomena (Nosoko, T.)

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

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 (Amano, T.)

Wind engineering, Typhoon, Buffeting, Vortex-induced Oscillation, Galloping.

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 Coastal Wave Dynamics (Tsutsui, S.)

Nonlinear dispersive waves, Modelling of wave dynamics, Reef coast.

Advanced Electromagnetic Energy Engineering (Kaneko, E.)

Electromagnetic Energy Engineering.

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

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

Departmental Curriculum

Dissertation on Material, Structural and Energy Engineering

Dissertation on Material, Structural and Energy Engineering

Special Field Works

Special Educational Training

Interdisciplinary Intelligent Systems Engineering Course

Environment and Information Engineering

Advanced Bioprocess (Matsui, T.)
Biotechnology, Biochemical engineering.

Advanced Architectural Design Theory (Ogura, N.)
Design, History, Culture, Environment.

Advanced Theory of Social Space Systems (Shimizu, H.)
District planning, Community, Citizens' participation.

Advanced Fluid Mechanics in Environmental Engineering (Tsutsumi, J.)
Urban meteorology, Micro meteorology system, Thermal sensation, Heat transport, Urban Ventilation.

Advanced Spoken Language Processing (Takara, T.)
Advanced lecture on spoken language processing such as speech analysis, speech synthesis and automatic speech recognition. Speech processing of the Ryukyuu dialect.

Advanced Software Systems (Kono, S.)
Software system development, Large program, Object oriented systems, Persistent object, Verification, Test.

Advanced Emergent and Intelligent Robotics (Yamada, K.)
Emergent Computation, Evolutionary Computation, Multi Agent System, Collective Intelligence and Swarm Intelligence for Robotics.

Advanced Autonomous Neural Systems (Nagayama, I.)
Brain Science, Autonomous Systems, Chaos theory, Adaptive Processing, Cognitive Science, Intelligence

Advanced Parallel and Distributed Systems (Nakamura, M.)
Parallel machine architecture, Design and verification of parallel and distributed algorithms.

Advanced Wave Signal Processing (Fujii, S.)
Imaging of invisible information with wave signal, Holographic imaging in acoustic and radio waves, Synthetic aperture rader.

Advanced Acoustic Design (Tokashiki, T.)
Room acoustics, Reverberation times, Auditorium, Road traffic noise, Absorption coefficient, Insulation ability

Electronics and Information Engineering

Advanced Optical Fiber Measurement Technology (Namihiro, Y.)

Optical Fiber measurement technologies of transmission systems.
(Chromatic dispersion, polarization mode dispersion, Nonlinear fiber optics etc.)

Advanced System Stability (Miyagi, H.)

Advanced lecture on stability theory of dynamic systems, based on Lyapunov method. Stability analysis of large scale systems and robust analysis of nonlinear control systems are also discussed.

Advanced Computer Control Theory (Nagado, T.)

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

Advanced Acoustic Signal Processing (Asharif, M. R.)

Acoustic theory of speech production, Time-domain models for speech processing, Waveform coding of speech signal, LPC and parametric coding, Homomorphic speech processing, Man-machine communication, Special study on acoustic echo and noise canceling.

Advanced Optimal System Design (Tamaki, S.)

Advanced lecture on optimization of functionals, optimal regulator theory and special algorithms for convex optimization. Numerical method of controller design is also discussed.

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 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 Adaptive Systems (Kinjo, H.)

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

Advanced System Architecture (Wada, T.)

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

Departmental Curriculum

Dissertation on Interdisciplinary Intelligent Systems Engineering

Dissertation on Interdisciplinary Intelligent Systems Engineering

Special Field Works

Special Educational Training