

FACULTY MEMBERS AND THEIR RESEARCH INTERESTS (Master's Program)

EARTH SCIENCES

Baba, Sotaro (Faculty of Education)

Professor, D.Sc., 1998, Osaka City University
Geology, metamorphic petrology
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Fujita, Kazuhiko

Professor, D.Sc., 1999, Tohoku University
Marine micropaleontology and coral-reef geosciences, paleoenvironmental analysis of Quaternary reef deposits: ecology and paleoecology of large benthic foraminifers
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Furukawa, Masahide

Professor, Ph.D., 1990, Kobe University
Marine and environmental geology, tectonics of the back-arc basin and radiation science of the earth's environment
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Hisaki, Yukiharu

Professor, D.Sc., 1996, Tohoku University
Physical oceanography, the dynamics of ocean currents and ocean waves near the coast, especially, observation and analysis of the ocean using the remotely sensed data and in-situ data
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Ito, Kosuke

Associate Professor, Ph.D., 2011, Kyoto University
Numerical weather prediction, high-impact weather events such as tropical cyclones and local heavy rainfall, data assimilation, atmosphere-ocean coupled system, geophysical fluid dynamics
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Nakamura, Mamoru

Professor, D.Sc., 1997, Kyoto University
Seismology, seismotectonics, crustal structure in island arc, numerical modeling of tsunami
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Ogata, Takayuki (Faculty of Education)

Associate Professor, D.Sc., 2005, University of Tsukuba
Geoscience, geomorphology, environmental science
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Sentoku, Asuka

Assistant Professor, Ph.D., 2013, Osaka City University
Palaeontology, taxonomy, skeletal morphologies of Scleractinia, coral biogeography and microstructure.
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Shinjo, Ryuichi

Professor, Ph.D., 1992, Tohoku University
Igneous petrology, mineralogy and isotope geochemistry
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Yamada, Hiroyuki

Associate Professor, Ph.D., 2000, Hokkaido University

Tropical meteorology, mesoscale meteorology, observations and numerical simulations of precipitation processes associated with disturbances and tropical cyclones

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CHEMISTRY**Arakaki, Takemitsu**

Professor, Ph.D., 1996, Duke University (U.S.A.)

Environmental chemistry, atmospheric chemistry, analysis of chemical compositions in environmental samples such as atmospheric aerosols and seawater during photochemical processes

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Arimitsu, Satoru

Associate Professor, Ph.D., 2008, University of Louisville (U.S.A.)

Organic chemistry

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Asato, Eiji

Professor, D.Sc., 1989, Kyushu University

Coordination chemistry, synthesis of polynuclear transition metal complexes aiming at development of new molecule-based functions. Coordination and cluster chemistry of quinone-based ligands

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Fujimura, Hiroyuki

Professor, D.Sc., 2002, University of the Ryukyus

Analytical chemistry, chemical oceanography and carbonate chemistry

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Nakagawa, Tessui

Assistant Professor, Ph.D., 2009, Hiroshima University

Material chemistry (hydrogen storage material and ammonia capturing), chemical engineering, inorganic chemistry, and recycle chemistry

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Ogihara, Kazuhito

Professor, D. Sc., 1990, Hiroshima University

Organic chemistry, natural product chemistry

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Shimada, Kojiro

Assistant Professor, Ph.D., 2013, Tokyo University of Agriculture and Technology (Japan)

Environmental chemistry, atmospheric chemistry, aerosol chemistry, aerosol transformation during long range transport.

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Suzuka, Toshimasa

Professor, Ph.D., 2003, Kyoto University

Organic chemistry, synthetic chemistry

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Takimoto, Daisuke

Assistant Professor, Ph.D., 2017, Shinshu University

Electrochemistry and materials science

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Tanaka, Junichi

Professor, Ph.D., 1990, Osaka University

Marine natural products chemistry, studies on bioactive compounds from marine invertebrates

Note: Will teach courses but not take new students.

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Teruya, Toshiaki (Faculty of Education)

Professor, D.Sc., 2003, Nagoya University

Natural products chemistry, structure elucidation and evaluation of biological activities of natural products

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Toki, Tomohiro

Associate Professor, D. Sc., 2004, Hokkaido University

Geochemistry, cold seeping mechanism, geochemistry of hydrothermal systems, origin and migration of natural gas, formation processes of gas hydrates

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Yonekura, Nobuaki

Associate Professor, D. Eng., 1994, Kyushu University

Biophysical chemistry, development of techniques for environmental virus analysis, microbial fuel cells and gene therapy

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BIOLOGY**Denda, Tetsuo**

Professor, D.Sc., 1996, Kobe University

Biology, vascular plant phylogeny and evolution in the Ryukyus and adjacent areas

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Harii, Saki (Tropical Biosphere Research Center)

Associate Professor, D.Sc., 2001, The University of Tokyo

Marine biology, biology and ecology of marine invertebrates of coral reefs, with special focus on the reproductive biology and symbiosis of reef-building corals

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Hirose, Euichi

Professor, D.Sc., 1991, University of Tsukuba

Invertebrate biology: biology of tunicates, morphology, body surface, cell function, photosymbiosis

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Ikeda, Yuzuru

Professor, D.Fish. Sc., 1993, Hokkaido University

Biology and aquaculture, learning and communication of cephalopods; laboratory culture of cephalopods

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Imai, Hideyuki

Associate Professor, D.Fish. Sc., 1999, Tokai University

Marine biology, population genetics of aquatic animals: molecular genetics, crustacean biology

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Itoh, Ryuichi

Associate Professor, D.Sc., 1999, The University of Tokyo

Biology, biology of plant organelles (plastids and mitochondria)

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Kobayashi, Shun

Assistant Professor, Ph.D., 2017, University of the Ryukyus
Ecology, life history of terrestrial animals on islands, and animal-plant interactions
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Kubota, Yasuhiro

Professor, D.Sc., 1996, Tokyo Metropolitan University
Macroecology, biogeography and community ecology and their application to biodiversity conservation
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Kurihara, Haruko

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Biology, marine environmental science, coral reef biology and ecology, climate change, co-physiology
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Biology, reproductive biology, cell biology, evolutionary biology
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Naiki, Akiyo (Tropical Biosphere Research Center)

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Plant taxonomy, systematics, plant reproductive ecology
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Nakamura, Takashi

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Biology, ecology and physiology of coral reef organisms, photophysiology of plant-animal symbiosis
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Otaki, Joji

Professor, Ph.D., 2000, Columbia University in the City of New York
Biology, molecular physiology, color-pattern formation of butterfly wings, cellular regeneration and development, phenotypic plasticity and evolution, protein structure and function, biological impact of Fukushima nuclear accident
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Reimer, James D.

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Biology, marine invertebrate biodiversity, evolution, phylogenetics and phylogenomics, taxonomy, ecology, symbiont diversity and ecology, marine ecology and conservation, eDNA, historical marine ecology
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Sakai, Kazuhiko (Tropical Biosphere Research Center)

Professor, D.Sc., 1999, Kyushu University
Ecology, ecology and conservation biology of reef corals including studies of community and population ecology, life-history evolution, sex allocation, and population genetics
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Suda, Shoichiro

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Phycology, ultrastructure, taxonomy and phylogeny of microalgae
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Tachihara, Katsunori

Professor, D.Agr., 1988, Kyushu University
Ichthyology, artificial seed production and life history of freshwater and marine fishes
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Takemura, Akihiro

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Biology and aquaculture, environmental biology of fishes; perception and utilization of cues in reef environments in tropical fishes, molecular and physiological aspects of biological clocks in relation to daily, tidal, lunar and annual rhythms
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Tominaga, Atsushi (Faculty of Education)

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Animal taxonomy, biodiversity, ecology of amphibians
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Yagisawa, Fumi (Center for Research Advancement and Collaboration, CRAC)

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Organelles, molecular biology, and cell biology
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Yamahira, Kazunori (Tropical Biosphere Research Center)

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Evolutionary biology, evolution and ecology of tropical fishes
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Yamasaki, Hideo

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Biology, biology and biochemistry of active oxygen and nitrogen species
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Table (Article 10) Master's Program

Course: Chemistry, Biology and Marine Science

FIELD			SUBJECT	CREDITS	HOURS	YEARS	Subject Code	SEMESTERS	SUBJECT DESCRIPTION
BIOSCIENCE	REQUIRED	COMMON	Advanced Seminar I	1.5	22.5	1	ESSP11010	Fall & Spring	Present and discuss research information such as original academic papers, as well as research plans and findings, in a seminar format.
			Advanced Seminar II	1.5	22.5	1	ESSP11020	Fall & Spring	Present and discuss research information such as original academic papers, as well as research plans and findings, in a seminar format.
			Advanced Seminar III	1.5	22.5	2	ESSP13010	Fall & Spring	Present and discuss research information such as original academic papers, as well as research plans and findings, in a seminar format.
			Advanced Seminar IV	1.5	22.5	2	ESSP13020	Fall & Spring	Present and discuss research information such as original academic papers, as well as research plans and findings, in a seminar format.
			Thesis Research I	3	90	1	ESSP11030	Fall & Spring	For each individual research objective and phase, provide direct instruction and guidance concerning research methods and development.
			Thesis Research II	3	90	1	ESSP11040	Fall & Spring	For each individual research objective and phase, provide direct instruction and guidance concerning research methods and development.
			Thesis Research III	3	90	2	ESSP13030	Fall & Spring	For each individual research objective and phase, provide direct instruction and guidance concerning research methods and development.
			Thesis Research IV	3	90	2	ESSP13040	Fall & Spring	For each individual research objective and phase, provide direct instruction and guidance concerning research methods and development.
	ELECTIVE	COMMON	International Field Course	2	30	1,2	ESSP13090	Spring	Field and laboratory work at field stations to learn techniques of marine and environmental sciences related to LA MER program.
		SPECIAL	Evolutionary Ecology of Reef Animals I	2	30	1,2	ESBI13190	Fall	Reviews and discussions of reproductive strategies, life-history strategies, population dynamics and population genetics of marine organisms, with emphasis on colonial animals.
			Evolutionary Ecology of Reef Animals II	2	30	1,2	ESSP13110	Spring	Reviews and discussions of reproductive strategies, life-history strategies, population dynamics and population genetics of marine organisms, with emphasis on colonial animals.
			Advanced Topics in Marine Animal Behavior	2	30	1,2	ESBI13160	Fall	Topics in behavioral studies for marine animals, such as biotelemetry measurement, ethology and comparative psychology. This class deals mainly with cephalopods as a model animals for this field.
			Advanced Fisheries Biology	2	30	1,2	ESBI13140	Fall	Life history and fishing methods of fishes in Japan (sardine, herring, mackerel, yellowtaile, sea bream, flounder, ayu, etc.).
			Plant Phylogeny and Evolution	2	30	1,2	ESBI13020	Fall	Recent advances in flowering plant phylogeny and evolution.
			Life of Tunicates	2	30	1,2	ESBI13090	Spring	Introduction to specific features and functions supporting the life of marine invertebrates, dealing with tunicates.
			Stress Physiology	2	30	1,2	ESBI13070	Fall	Introduction to basic principles of stress physiology, including the production and scavenging mechanisms of active oxygen and active nitrogen in living organisms.
			Advanced Cell Biology	2	30	1,2	ESBI13080	Spring	Current topics in cell biology, with emphasis on the biogenesis of organelles and cytoskeleton.
Advanced Molecular Physiology	2	30	1,2	ESBI13100	Spring	Fundamentals of molecular biology, cellular physiology, developmental biology, immunology, and neurobiology. Focuses on mammalian and insect systems.			

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Course: Chemistry, Biology and Marine Science

FIELD	SUBJECT			CREDITS	HOURS	YEARS	Subject Code	SEMESTERS	SUBJECT DESCRIPTION
BIOSCIENCE	ELECTIVE	SPECIAL	Advanced Scientific Manuscript Writing	2	30	1,2	ESBI13130	Spring	Structure and organization of scientific publications, as well as how to organize and write manuscripts will be discussed. Special attention will be put on logical organization and troublesome grammar points.
			Advanced Comparative Endocrinology	2	30	1,2	ESBI13180	Fall	Endocrine organs and various hormones in vertebrates. Roles of hormones in metabolism, reproduction, and behavior.
			Marine Molecular Ecology	2	30	1,2	ESBI13170	Fall	Principles and fundamental methods in aquatic animals using molecular and population genetics. Practical method on DNA analysis.
			Systematic Zoology	2	30	1,2	ESBI13200	Spring	Principles and practices of taxonomy, systematics, and phylogenetics of animals, with reference to contemporary discussions on relevant conceptual issues.
			Responses in Plant Morphogenesis to Environmental Signals	2	30	1,2	ESBI13120	Fall	Current topics about the signal cascades of plant morphogenesis caused by environmental signals.
			Animal Evolution and Diversity	2	30	1,2	ESBI13050	Fall	Introduction to evolution and diversity in vertebrates.
			Advanced Animal Ecology	2	30	1,2	ESBI13060	Fall	Overview of animal ecology, animal-plant interaction, and island biology.
			Advanced Marine Biology	2	30	1,2	ESBI13220	Spring	After the revision of basic marine biology concept, the class will discuss about littoral and pelagic ecosystems from major geographic regions (tropical, temperate and polar).
			Molecular Biochemistry of Plant Biodegradation	2	30	1,2	ESBI13230	Fall	Reviews on the current topics in biodegradation of plants with special reference to the mechanisms by which lignocellulolytic enzymes are involved in breakdown of plant cell walls.
			Advanced Evolutionary Ecology	2	30	1,2	ESBI13210	Spring	Evolutionary analysis of form and function, life-history, and sexual dimorphism in animals.
			Marine Environmental Biology and Ecology	2	30	1,2	ESBI13040	Fall	Overview of current research on marine environmental biology.
			Advanced Coral Reef Ecology	2	30	1,2	ESBI13030	Spring	Reviews on current topics in coral reef ecology.
			Advanced Marine Zootaxonomy	2	30	1,2	ESBI13240	Spring	Practices of zootaxonomy of marine invertebrates.
			Advanced Seminar of Evolutionary Reproductive Biology	2	30	1,2	ESBI13250	Spring	Instruction of reproductive biology in terms of evolutionary aspects and practice of analyses with laptop computer.
			Advanced Plant Taxonomy and Phytogeography	2	30	1,2	ESBI13260	Spring	Principles and fundamental methods in plant taxonomy and phytogeography with special reference to the diversity of flowering plants.
			Advanced Molecular and Cellular Biology	2	30	1,2	ESBI13110	Spring	Topics in organelle dynamics and function. Focuses on single membrane bound organelles such as endoplasmic reticulum, Golgi apparatus, peroxisomes, and lysosomes.
			Advanced Plant Ecology	2	30	1,2	ESBI13020	Fall	Review of current topics on the maintenance and origin of biodiversity patterns based on taxonomic, functional and phylogenetic properties.
Basics of Symbiosis	2	30	1,2	ESBI13290	Spring	Introduction of current topics about the symbiotic relationship between corals and algae.			

Requirements for course completion:

Students must obtain a total of 30 or more credits including 6 credits from Advanced Seminar and 12 credits from Thesis Research on Bioscience Field. In addition to receiving the necessary instruction, the student must also receive a passing grade on final examinations and Master's thesis.

Table (Article 10) Master's Program

FIELD			SUBJECT	CREDITS	HOURS	YEARS	Subject Code	SEMESTERS	SUBJECT DESCRIPTION	
ENVIRONMENTAL SCIENCE	REQUIRED	COMMON	Advanced Seminar I	1.5	22.5	1	ESSP11050	Fall & Spring	Present and discuss research information such as original academic papers, as well as research plans and findings, in a seminar format.	
			Advanced Seminar II	1.5	22.5	1	ESSP11060	Fall & Spring	Present and discuss research information such as original academic papers, as well as research plans and findings, in a seminar format.	
			Advanced Seminar III	1.5	22.5	2	ESSP13050	Fall & Spring	Present and discuss research information such as original academic papers, as well as research plans and findings, in a seminar format.	
			Advanced Seminar IV	1.5	22.5	2	ESSP13060	Fall & Spring	Present and discuss research information such as original academic papers, as well as research plans and findings, in a seminar format.	
			Thesis Research I	3	90	1	ESSP11070	Fall & Spring	For each individual research objective and phase, provide direct instruction and guidance concerning research methods and development.	
			Thesis Research II	3	90	1	ESSP11080	Fall & Spring	For each individual research objective and phase, provide direct instruction and guidance concerning research methods and development.	
			Thesis Research III	3	90	2	ESSP13070	Fall & Spring	For each individual research objective and phase, provide direct instruction and guidance concerning research methods and development.	
			Thesis Research IV	3	90	2	ESSP13080	Fall & Spring	For each individual research objective and phase, provide direct instruction and guidance concerning research methods and development.	
	ELECTIVE	SPECIAL	COMMON	International Field Course	2	30	1,2	ESSP13100	Spring	Field and laboratory work at field stations to learn techniques of marine and environmental sciences related to LA MER program.
			Topics on Marine Chemical Ecology	2	30	1,2	ESCH11130	Spring	Chemicals involved in the ecology of marine organisms will be reviewed.	
			Introduction to Atmospheric Chemistry	2	30	1,2	ESCH11140	Spring	This course provides an overview of atmospheric chemistry and a working knowledge of the critical issues that atmospheric chemists face today.	
			Environmental Analytical Chemistry I	2	30	1,2	ESCH11090	Spring	This course deals with qualitative and quantitative analytical chemistry, especially principles and procedures of chemical analyses of environmental water sample.	
			Practical Skills in Presentation, Publication and Patent Application	2	30	1,2	ESCH11110	Spring	Learning and training presentation/writing skills for research outputs such as: (1) oral presentation at conference (2) poster presentation at conference (3) patent search and submission (4) scientific paper	
			Introduction to Natural Product Chemistry	2	30	1,2	ESCH11150	Spring	This course deals with isolation, structure determination and biological activities of natural products.	
			Advanced Environmental Analytical Chemistry	2	30	1,2	ESCH13020	Fall or Spring	Lectures on air pollution will be given on the characteristics of air pollutants that affect climate change and our health.	
			Advanced Crustal Hydrosphere Geochemistry	2	30	1,2	ESCH13010	Spring	Reviews of geochemical studies about fluids and gasses beneath the seafloor.	
			Biochemistry of Metal Ions	2	30	1,2	ESCH11080	Spring	Lecture on roles of metal ions in biology.	
			Catalytic Chemistry	2	30	1,2	ESCH11120	Spring	This course describes the preparation methods, basic theories, and latest topics of catalysts used in chemical reactions that cause energy conversion between electrical and chemical energy.	
			Advanced Stereochemistry	2	30	1,2	ESCH11060	Fall	This lecture will be about basic knowledge and information how to control stereochemistry on organic reactions.	
Molecular Spectroscopy I	2	30	1,2	ESCH11010	Spring	Spectroscopies to characterize molecular properties and the applications in biophysical chemistry.				

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FIELD			SUBJECT	CREDITS	HOURS	YEARS	Subject Code	SEMESTERS	SUBJECT DESCRIPTION
ENVIRONMENTAL SCIENCE	ELECTIVE	SPECIAL	Advanced Ocean Remote Sensing I	2	30	1,2	ESEA13130	Spring	Principles of ocean remote sensing such as radiometer, scatterometer and altimeter. Applications of ocean remote sensing to physical oceanography.
			Advanced Ocean Remote Sensing II	2	30	1,2	ESEA13140	Spring	Principles of ocean remote sensing such as radiometer, scatterometer and altimeter. Applications of ocean remote sensing to physical oceanography.
			Advanced Meteorology I	2	30	1,2	ESEA13150	Fall	Lecture on basic theory and recent advances of atmospheric sciences, including the evolution and structure of precipitating cloud systems in the tropical and subtropical regions.
			Advanced Meteorology II	2	30	1,2	ESEA13160	Spring	Lecture on basic theory and recent advances of atmospheric sciences, including the evolution and structure of precipitating cloud systems in the tropical and subtropical regions.
			Advanced Numerical Weather Prediction I	2	30	1,2	ESEA13190	Fall	Fundamentals on numerical weather prediction, including basic equations, computer programming, and performing idealized and real through experiments.
			Advanced Numerical Weather Prediction II	2	30	1,2	ESEA13200	Spring	Fundamentals on numerical weather prediction, including data analysis, forecast errors, and data assimilation.
			Advanced Metamorphic Petrology I	2	30	1,2	ESEA13090	Fall	Petrogenesis and dynamics of metamorphic rocks and its geotectonic implications.
			Advanced Metamorphic Petrology II	2	30	1,2	ESEA13100	Spring	Petrogenesis and dynamics of metamorphic rocks and its geotectonic implications.
			Advanced Geomorphology I	2	30	1,2	ESEA13110	Fall	Principles and applications of geomorphological processes such as weathering, erosion, transportation and sedimentation
			Advanced Geomorphology II	2	30	1,2	ESEA13120	Spring	Principles and applications of geomorphological processes such as weathering, erosion, transportation and sedimentation
	SPECIAL	Advanced Geochemistry I	2	30	1,2	ESEA13030	Fall	Isotopic and trace element geochemistry of igneous rocks and its geotectonic implications.	
		Advanced Geochemistry II	2	30	1,2	ESEA13040	Spring	Isotopic and trace element geochemistry of igneous rocks and its geotectonic implications.	
		Crustal Movement Monitoring I	2	30	1,2	ESEA13010	Fall	Basic theory for the monitoring of crustal movement, volcanic activity, earthquake, etc., based on radiation science and geomagnetism.	
		Crustal Movement Monitoring II	2	30	1,2	ESEA13020	Spring	Basic theory for the monitoring of crustal movement, volcanic activity, earthquake, etc., based on radiation science and geomagnetism.	
		Advanced Seismology I	2	30	1,2	ESEA13050	Fall	This course constitutes an overview of observational and theoretical seismology and the utilization of seismic waves for the study of the earth's interior. Topics include elastic wave propagation, seismic ray theory, interpretation of travel times, surface wave, and seismic tomography.	
		Advanced Seismology II	2	30	1,2	ESEA13060	Spring	This course constitutes an overview of observational and theoretical seismology and the utilization of seismic waves for the study of the earth's interior. Topics include elastic wave propagation, seismic ray theory, interpretation of travel times, surface wave, and seismic tomography.	
		Coral Reef Earth Science I	2	30	1,2	ESEA13170	Fall	Lecture on recent advances and topics on earth sciences related to coral reefs, which include geomorphology, geology, geohistory, paleontology, carbonate sedimentology, paleoceanography, environmental sciences, and geocotechnology.	
		Coral Reef Earth Science II	2	30	1,2	ESEA13180	Spring	Lecture on recent advances and topics on earth sciences related to coral reefs, which include geomorphology, geology, geohistory, paleontology, carbonate sedimentology, paleoceanography, environmental sciences, and geocotechnology.	
		Earth History and Palaeontology I	2	30	1,2	ESEA13070	Fall	This lecture will help you develop key knowledge and research skills in the field of earth history and palaeontology. Lecture on basic training in earth sciences, with a specialisation in stratigraphy and palaeontology.	
		Earth History and Palaeontology II	2	30	1,2	ESEA13080	Spring	This lecture will help you develop key knowledge and research skills in the field of earth history and palaeontology. Lecture on basic training in earth sciences, with a specialisation in stratigraphy and palaeontology.	

Requirements for course completion:

Students must obtain a total of 30 or more credits including 6 credits from Advanced Seminar and 12 credits from Thesis Research on Environmental Science Field. In addition to receiving the necessary instruction, the student must also receive a passing grade on final examinations and Master's thesis.