Welcome to the Graduate School of Fisheries and Environmental Sciences, Nagasaki University. This school comprises a family of highly motivated academicians, support staffs and students who are passionate towards the advancement of knowledge in the field of marine and environmental sciences. Through re-organization in 2011, our school was established to uphold the vision to be a center of academic excellence tackling issues on natural food, environmental pollution, climate change, radiation, renewable energy, fisheries, and aquaculture.

Particularly, we have professors who are experts on the biology and ecology of many aquatic organisms, geology, oceanography, and social sciences, who can provide quality education and high caliber research which are timely and innovative. Through the fusion of fisheries and environmental sciences, we further aimed to modernize fishery technologies and build resilience communities which are paramount to attain food security for the growing world population. In this way, we could attract present-day generation who are often embrace by high technologies.

Excellence in academic, research, innovation and capacity building have always been our priority. Currently, three institutes are attached to our graduate school: Institute of Fisheries Science, Institute of Environmental Sciences and Institute of East China Sea Research (ICESER). Training ship, Nagasaki-Mara is attached to our Faculty of Fisheries, and is actively doing international studies around Korea, Taiwan, China, and Vietnam, where we have liaison offices. We also offer extension services to other universities abroad in terms of collaborations, technical assistance, technology transfer and conduct of training and workshop in cooperation with the Nagasaki University Center for International Collaborative Research (CICORI). In 2011, we have started a project on the environmental preservation and improvement of fisheries of Lake Victoria, Kenya in collaboration with their local universities and research institutes.
Graduate School of Fisheries and Environmental Sciences

The 21st century is called the century for food and the environment: on an international level, a sense of harmony is being called for between natural and environmental conservation on the one hand and production and development on the other, and where societies, industries, and governments have placed the sustainability of food and the environment as fundamental principles. In order to respond to the demands of our society, the philosophical core of the Graduate School of Fisheries and Environmental Sciences is as follows:

"By promoting comprehensive and interdisciplinary research and education that integrates fisheries and environmental sciences, we shall nurture and develop highly specialized professionals able to lead and contribute to solving problems related to food and the environment, as well as scientists with an outstanding degree of international awareness, who will contribute to the creation and development of a novel interdisciplinary sciences that will lead to the harmonization of humanity and the environment."

Fisheries science and environmental science, which examine the supply of seafood and environmental conservation as their academic missions, aspire for the coexistence of humans and nature, and have a high degree of commonality in the methods to examine problems and develop solutions. In these fields of education and research, interdisciplinary integration is necessary and extremely effective. This graduate school seeks to realize interdisciplinary integration by strengthening multidisciplinary education in addition to the providing education in more specific fields to develop personnel who can meet the above needs of society.

Overview of the Graduate School of Fisheries and Environmental Sciences

- **Five-year Doctoral Program (5 yrs)**
  - Department of Marine Science
  - Fisheries Science Course
  - Environmental Science Course

- **Doctoral Program (3 yrs)**
  - Fisheries Science Course
  - Environmental Science Course

- **Master's Program (2 yrs)**
  - Fisheries Science
  - Environmental Science

In the Department of Marine Science, we have created a systematic 5-Year Program that removes the distinction between a master's degree and doctoral degree. Our concept is that ongoing and well-planned educational instruction is essential to gaining knowledge and experience needed in the field sciences that focus on the oceans, which show large degrees of seasonal and annual variation. Furthermore, we shall provide the following distinctive educational and personnel development opportunities.

Outstanding marine field researchers will be developed, who will engage in interdisciplinary research relating to aspects such as the conservation and restoration of the marine environment and ecosystem on an international scale and who will contribute to the establishment of a scientifically based principles for securing a sustainable food supply from the ocean.

Through an advanced, systematic course that includes hands-on fieldwork in marine environments, we will provide practical education that promotes research regarding the conservation of marine environments and ecosystems and the sustainable yield of marine bioresources, and provide students with a broad overview of this extensive academic field.

In order for students to become sufficiently able to engage in scientific communication with overseas researchers and generate novel research, we will scientifically collaborate with overseas researchers. Furthermore, through exposure to international seminars and overseas short-term exchanges, we aim to develop researchers who can function on an international level.

Students enrolled in this department [5-Year Doctoral Program] are required to devote themselves to improving their academic abilities with the clear aim of obtaining a doctoral degree. In order to provide an environment where students can maintain their focus on the aim and develop into international leaders in marine field research, we have established a unique system of student scholarships. Each student will have the opportunity to receive 30,000 yen a month for at most 3 years (except for the scholarship student of Japanese Government (MEXT) Scholarship).

http://www.fe.nagasaki-u.ac.jp/5year/english/index.html
Department of Environment and Fisheries Resources

The Department of Environment and Fisheries Resources trains practice-oriented instructors and researchers with comprehensive problem-solving abilities. The Department helps students acquire specialized knowledge that contributes to solving environmental problems and building a sustainable society that coexists in harmony with the environment, new knowledge and technologies for safe, advanced uses and proper management of marine food resources, and comprehensive and practical knowledge that covers all these aspects.

Fisheries Science Course

Students shall acquire new knowledge and skills of fisheries science for safe and sophisticated use and proper management of marine food resources. In order to fulfill such missions, the students shall acquire advanced knowledge in a diverse and wide-ranging academic fields, including marine environment and resources, fishery production, biological functions, material science, and food science. Also, the students shall be enrolled in cross-listed subjects of the Environmental Studies Course to facilitate integration of the two courses and enrich practical education, which will assist students to acquire comprehensive problem-solving skills that meet regional and site-specific needs through actual learning experiences within their specialization.

Environmental Science Course

Students shall acquire broad and specialized knowledge to contribute to solving environmental problems and building a sustainable society that coexists in harmony with the environment. To achieve this goal, students study theory and research methods in environmental biology, environmental chemistry, environmental design and analysis, socio-cultural environment, and environmental policy and management. In addition, students study policies for environmental symbiosis, resource circulation, and environmental conservation skills, as well as practical and exercise-based education to develop problem-solving skills and the ability to conduct unique research based on diverse perspectives.

http://www.fe.nagasaki-u.ac.jp/english/research/oceanology.html
The two departments in the master’s program (Department of Fisheries Science and Department of Environmental Science) are placed under the Graduate School of Fisheries and Environmental Sciences.

Department of Fisheries Science

The Department of Fisheries Science in the Master’s Program aims to develop human resources who have advanced and specialized knowledge in the fields related to conservation of the marine environment and ecosystem, exploration of diverse phenomena of marine organisms, sustainable production of marine organisms, and effective use of marine biological resources, and have a fundamental understanding of related fields and social skills.

http://www.fe.nagasaki-u.ac.jp/english/research/scfishery.html

Department of Environmental Science

The principle of the master’s program is to promote environmental science that leads the transformation into a sustainable society coexisting with the environment. To realize this principle, the program intends to develop human resources who have the ability to tackle environmental problems with diversified perspectives together with specialized and advanced knowledge in the fields of natural sciences and social sciences. Courses in the program adopt a Problem- or Project-Based Learning to help students develop effective problem solving skills, multi- and inter-disciplinary knowledge of environmental issues, and effective collaboration skills.

Since today’s environmental problems include complicated issues on a global scale, we welcome international students who are highly motivated to acquire a wide range of knowledge as well as advanced specialized knowledge and are willing to work for the solution of environmental problems in their regions after completing the program.

http://www.fe.nagasaki-u.ac.jp/english/research/env.html
International Exchange Programs

Student Exchange Program (both for graduate and undergraduate students)

This program accepts students from overseas universities with which Nagasaki University has concluded a student exchange agreement for one year or one semester. Undergraduate exchange students are enrolled in a faculty/school and take courses to earn credits. Graduate exchange students are enrolled in a graduate school and receive research advice. Tuition shall be waived for the students and students can receive accreditation for their studies where such credit exchange is recognized by their home university.

Double Degree Program (DD)

DD program accepts graduate students from two universities. Ph.D. students from National Taiwan Ocean University and M.Sc. students from National Kaohsiung Marine University can apply to the DD program.

Nagasaki University International Student Program (NISP) (for undergraduates)

NISP accepts undergraduate students from overseas universities with which Nagasaki University has concluded a student exchange program. Students learn Japanese language and study specialized subjects such as natural science, social science, humanities, etc. Those specialized subjects are provided by the faculties/schools to arrange a special program exclusively for NISP students. Students are enrolled in the faculty/school according to their major at home university.

Projects

Harmonizing human activity with environment

In the face of increasingly serious environmental problems, the ideals which the Department pursues are conservation of the environment, sustainable development of human society, and finally the attainment of harmonious symbiosis between mankind and the global environment.

The Department conducts not only a wide range of research within each field of environmental science listed in the following websites but also transdisciplinary research projects to understand Earth surface dynamics and natural ecosystems, to grasp human socioeconomic activities as a source of environmental problems, to promote resilience of social-ecological systems, and to find ways to a sustainable society in harmony with the environment.

Challenging the ocean in the future

It is predicted that in the waters surrounding Japan, the effects of climate change will become observable earlier in the East China Sea especially. It is said that the sea surface temperature rise in the East China Sea will accelerate to 2.1-2.4°C per 100 years. Furthermore, large volumes of pollutants from East Asian countries experiencing rapid economic growth are carried into the ocean through rivers and the atmosphere, leading to deterioration in marine biological productivity. The waters around Nagasaki have become the place where changes in the marine environment have become most discernable worldwide, and the development of forward-looking research for evaluating their ecological impacts is needed.

In 2013, the major research project 'Research Initiative for Adaptation to Future Ocean Change' commenced at Nagasaki University with the aim of constructing an international research hub to examine measures for the production and use of marine biological resources adapted to the marine environment predicted to tropicalize in the near future (30–40 years), and to investigate the actual conditions of marine environmental changes, both natural and as a result of human activities, and the ecosystem functional responses to these changes, in relation to the rise of sea temperature in the area around the East China Sea. Researchers representing Japan from the fields of fishery science, oceanography, and environmental science gathered and formed the four groups, and are engaged in cutting-edge research while continuing close inter-group collaboration.

Bearing in mind the idea of an ocean that has become subropical in the near future (after 30–40 years), we will:

1. Recognize the increasingly apparent transformative trend of the marine environment in the ocean area surrounding the East China Sea;

2. Clarify the direction of structural and functional changes in marine ecosystems connected to changes in the marine environment;

3. Develop new production and management techniques for marine life adapted to changes in the marine environment and ecosystems;

4. Construct a foundation for the efficient utilization of this marine life as a safe food resource.

Through this series of processes, we outline a basic path for the use of the bounty of the ocean into the future.
Affiliated facilities

Institute for East China Sea

The Institute for East China Sea Research overlooks the East China Sea, which is one of the world's richest bodies of water. To the Japanese people, the East China Sea is one of the most important bodies of water, because it supports the livelihood of millions of people. However, the populations of the surrounding regions are also one of the highest in the world; hence, the East China Sea is under intense anthropological influence. In this regard, the changing environmental conditions and the declining productivity of these waters are under scrutiny. For example, the water temperatures are rising and the biodiversity is changing, and evidence of changing nesting habitats, as well as the timing of spawning has been reported. Changes such as these are putting enormous influence on the safety of the water's bioresources and the ability to maintain the production of the next generation of bioresources. Therefore, our Institute is engaged in scientific research to understand the changes occurring in the East China Sea and how they will affect the safety and bioproductivity of the region, as well as develop ways to protect and rehabilitate the environment.

The Institute is actively and comprehensively investigating problems in marine biology and the marine environment, through an interdisciplinary approach involving ecologists, physiologists, oceanographers, and environmental scientists.

The Institute for East China Sea Research has formed an alliance with the neighboring Seikai National Fisheries Institute and Nagasaki Prefectural Institute of Fisheries, to collaboratively advance research in the fisheries sciences and oceanography, as well as actively communicating information through seminars and symposia.

Five universities (Nagasaki University, Jeju University, Shanghai Ocean University, Taiwan Ocean University, and the University of the Ryukyus) that are actively pursuing research in fisheries science and oceanography have come together to form the Oceanographic and Fisheries Science Education Consortium of the East China Sea, to advance activity in research and education, as well as pursuing new collaborative research projects and conduct international symposia.

Training ships

We hold 2 training ships, Nagasaki maru and Kakuyo maru, at Faculty of Fisheries. The educational programs in the Graduate encourage the graduate students to participate the training cruises not only for experiencing marine science but also for self-discipline through the orderly community living. There are 2 foreign voyage to Korea and Taiwan for graduate students to have international seminar and training for marine science.
Warm Heart City
NAGASAKI

Our department buildings are in the heart of the Nagasaki city, where all your need is just around the corner. In addition, Nagasaki city is also known for its unique history and culture, being the first port in Japan opened for foreign trading, considered as birthplace of Catholicism in Japan, and symbol of peace. It is also the place where one can enjoy spectacular union of sea, mountains and rivers. Considering its relatively small size, local people can spot foreigners easily and greet them with a friendly smile. Because of these, foreign students in our University could enrich themselves not only academically, but also socially and mentally, which could provide them a wholesome experience away from home.

As we strive to be the most productive and vibrant center for fisheries and environmental conservation department in the Kyushu region, our faculty members uphold to provide excellent quality education. Our success during the past years was a result of hard work from our dedicated faculty members and students. Therefore, we have every reason to be confident that the coming years will bring a renewed commitment to the challenges and opportunities that lie ahead.

Professor Atsushi Hagiwara, Dean of the Graduate School of Fisheries and Environmental Sciences