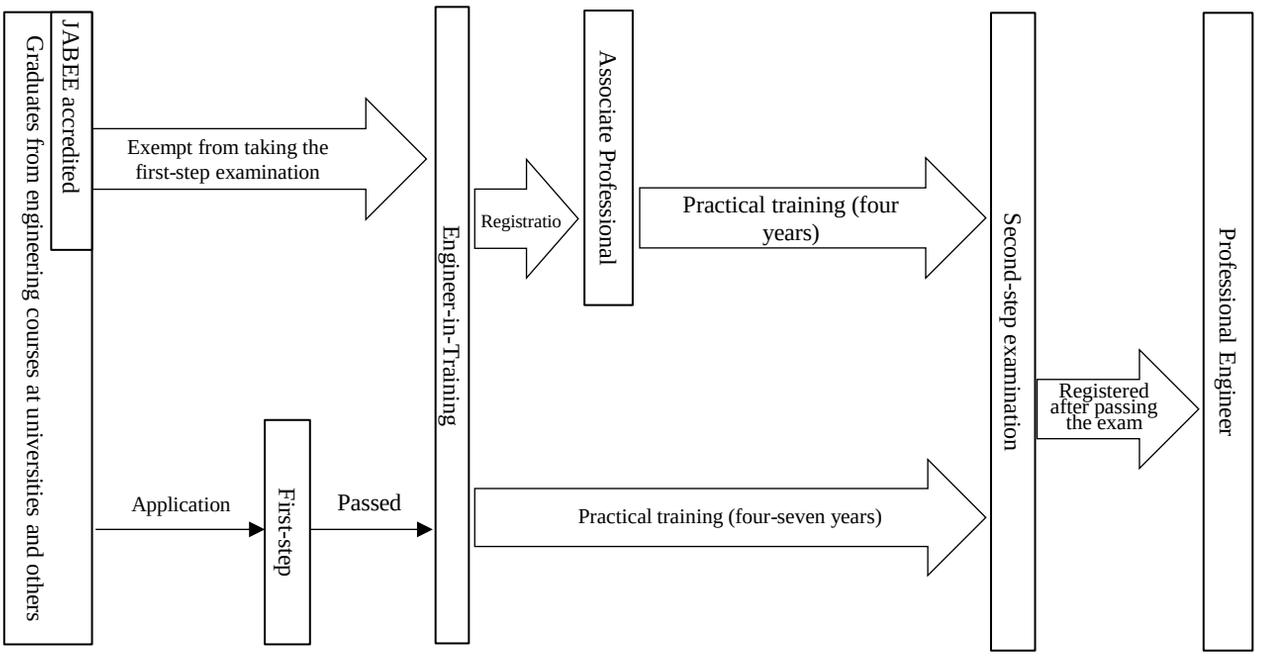
[3] Associate Professional Engineer

1. Qualification as Professional Engineer

The term “Professional Engineer” means a person who is registered by the Japanese government as a “Professional Engineer,” allowing them to engage in planning, research, design, analysis, testing, evaluation and guidance for matters that cannot be handled without advanced and adaptive expertise in science and technology. The term “Associate Professional Engineer” means a person who is registered by the Japanese government as an “Associate Professional Engineer,” allowing them to assist a Professional Engineer with the aforementioned operations for the purpose of acquiring the skills necessary to become a Professional Engineer.

The Tokyo University of Marine Science and Technology’s School of Marine Life Science is accredited by the Japan Accreditation Board for Engineering Education (JABEE).

JABEE is an organization that gives accreditation to higher educational facilities (universities and colleges of technology) that meet the international standards for engineering education programs. Graduates from the School of Marine Life Science, which is accredited by JABEE, can become registered as an “Associate Professional Engineer” by the Japanese government without the need to take the first-step Professional



The fact that the School of Marine Life Science is accredited by JABEE also provides graduates from the School with the following benefits:

(1) Accreditation by JABEE, which is an accreditation organization for education, stands as objective proof that the School offers high-quality basic education in engineering. Accordingly, graduates from the School can be confident that their qualifications as engineers will be highly rated in the community.
(2) As JABEE is a signatory to the Washington Accord, graduates from the School of Marine Life Science are regarded to be on par, in terms of engineering abilities, with those who have completed the programs implemented and accredited by signatories to the Accord in major Western countries, and can therefore work internationally. The Washington Accord is an international agreement on engineering education under which signatories agree to grant graduates of each other’s accredited programs the same recognition, rights and privileges as they grant to graduates of their own accredited programs.
(3) Graduates from the School can take the second-step Professional Engineer examination after receiving practical training for a predefined period as an “Engineer-in-Training,” for which they do not need to be registered as an Associate Professional Engineer by the government.

2. Engineering education program

In the following, for each undergraduate course of the School of Marine Life Science, we show a sample of subjects to be studied to complete the engineering education program.
As shown in the samples, students of the School can complete the program by acquiring academic credits in the number required for graduation.
Please note, however, that the engineering education program is designed to provide a high-quality basic education in engineering, and students who want to complete the program need to attend the relevant classes based on the full recognition of the learning & educational objectives to be achieved in the program.
Please refer to the following table, in which the learning & educational objectives to be achieved through the engineering education program provided by the School are listed.

Targets to be achieved by students learning at the School of Marine Life Science		
(A)	(Communication)	Acquire basic skills for global communication.
	1) Learn how to write logical and persuasive sentences	
	2) Learn how to create graphs, diagrams and reports in an effective manner	
	3) Gain communication skills for oral presentations and discussion	
	4) Gain practical language skills by taking TOEIC tests and learning in small groups	
	5) Appropriately understand what actions need to be taken by oneself and others for collaboration, and gain necessary leadership skills	
(B)	(Ethics for engineers)	Develop an ethical framework and become able to conduct responsible social activities as an engineer.
	1) Understand the impacts and effects that technologies can have on society and nature and the social responsibilities to be fulfilled by engineers	
	2) Understand how the subjects in field of specialization are related to society and the natural environment	
(C)	(Basics of science)	Acquire basic knowledge in mathematics, natural sciences and information technology.
	1) Obtain basic scientific knowledge that can be applied to a range of fields	
	2) Gain the ability to think logically, and become able to take an appropriate approach to nature	
	3) Become able to make calculations and process information in a manner as required in the fields of science and technology	
(D)	(Basics of fisheries and oceanography)	Acquire basic knowledge about fisheries and oceanography, specifically about the hydrosphere and global environment, marine life resources, sustainable production of such resources, and use of marine products.
	1) Gain knowledge necessary to make comprehensive examinations across the field of fisheries and oceanography	
	2) Obtain knowledge about particularly important issues, such as global environmental conservation, protection of the marine environment, the sustainable use of fishery resources, and the features and safety of seafood	
	3) Understand the positioning of field of specialization within the broader context of fisheries science and oceanography	
	4) Specifically, obtain academic credits for the subjects related to life science, bioenvironmental science, bio-production science and bioresource chemistry	
(E)	(Specialized knowled	Acquire specialized knowledge as described below.
	1) (Undergraduate Course of Marine Biosciences)	Acquire knowledge and skills related to marine biological resources, specifically in relation to the culture and analysis of the resources; aquaculture of fish, shellfish and algae; aquatic genomics; breeding systems; and fishery production systems
	2) (Undergraduate Course of Food Science and Technology)	Gain the knowledge and skills necessary to ensure and increase the safety of food resources and to develop and assess foodstuffs able to provide new functions, with a view to developing the technologies to make the most efficient use of marine bioresources and other food resources by adopting chemical, microbiological, physics and engineering methods
	3) (Undergraduate Course of Marine Policy and Culture)	Gain knowledge and skills in field of specialization, including those related to international marine policy and to marine utilization and management, as a precondition to conduct both theoretical and practical research into the industrial, cultural and political approaches to be taken to issues related to the sustainable use of the sea by humankind

(F)	(Experiments, training, exercises and surveys)	Plan and conduct experiments, training, exercises and surveys to establish the habit of self-directed learning. Analyze and examine the results to develop problem-solving skills. Also, develop the ability to make decisions and act appropriately on-site under given conditions.
	1) Develop the ability to make an effective plan and implement it successfully in a steady and rational manner even when faced with a range of restrictions 2) Gain the skills to analyze and examine data and explain the results in an accurate manner 3) Make use of the knowledge obtained by attending classes in actual settings to evaluate and improve own abilities, including the ability to solve problems 4) Through on-site training and social training, understand what problems and challenges engineers may face in their jobs, thereby understanding the significance of obtaining specialized knowledge 5) Become able to turn the experiences gained through practical training into knowledge and share it with others 6) Become able to understand the actions to be taken to foster collaboration with others and act accordingly	
(G)	(Lifelong learning)	Acquire lifelong learning skills and the ability to obtain even more advanced knowledge in field of specialization to conduct frontline activities as a fisheries and marine engineer.
	1) Learn to independently refer to materials and ask senior researchers questions, thereby continuing the process of learn 2) Become able to determine which field or subject is related to each of the issues to be solved	
(H)	(Ability to solve issues)	Acquire the practical ability to make full use of fisheries & marine knowledge and skills to identify issues, to plan and conduct research to solve them, and to make presentations about the results.
	1) Become able to clarify the issues to be solved and to devise the methods to solve them 2) Develop the ability to deal with issues by making comprehensive use of basic and specialized skills and knowledge in the field of science 3) Enhance the ability to report the results of addressing issues and clarify the method of dealing with remaining problems 4) Become able to collaborate with others and act appropriately for the solution of issues	
(I)	(Comprehensive judgment)	Acquire a broad range of academic knowledge so as to be able to make decisions in a comprehensive and flexible manner.
	1) Develop the ability to think from multiple perspectives, including global and social viewpoints 2) Become able to accept the opinions of others, including experts in other fields, in a humble manner 3) Make a habit of reviewing technical achievements to make further improvements to them	