

TRAINING PROGRAM OF AQUACULTURE

(Issued together with Decision No 469/QĐ-ĐHTĐ 20/08/2021 by Rector of Tay Do University)

A. GENERAL INFORMATION

1. Name of training program (English name)	Aquaculture
2. Degree	Higher education
3. Training codes	7620301
4. Admission candidates:	Graduated from high school or equivalent
5. Training time	4.0 years
6. Training form	Full time
7. Required credits	150 (Not include Military Training and Physical Education)
8. Scale	10.0 scale or 4.00 scale
9. Diploma	Engineer in Aquaculture
10. Working position	<ul style="list-style-type: none">- Technical staff to manage laboratories, hatcheries and aquaculture farms, feed factories and seafood processing plants at companies and farms.- Business development managers (CEOs) of aquatic products and services and technical consultants at companies.- Technical consultants of fisheries development and certification organizations.- Production farm owner, independent trading company.
11. Possibility for further education	<ul style="list-style-type: none">- Research and teaching staff at universities, colleges, fisheries research institutes.- Fisheries extension officers, fisheries development planners and managers at national fisheries agencies and international organizations.- Have the ability to study postgraduate levels related to fisheries at national.- Have the ability to self-study, research and apply science and technology to practical production.

B. TRAINING OBJECTIVE AND LEARNING OUTCOMES

I. Training Objectives

1. General objectives

The program aims to educate aquaculture bachelor graduates who have (i) good political qualities and health; (ii) sufficient knowledge on water sciences and aquatic biology; (iii) skills and knowledge on seed production, culture techniques and health management of farmed aquatic animal species; (iv) ability in operation and management of aquaculture enterprises; (v) ability in self studies; and (vi) good English and computer skills. The quality of the graduates is expected to meet regional standards who will be able to work for national and international end users..

2. Specific objectives

2.1 Knowledges

- G1. Generalize knowledge of basic sciences, social sciences, politics – society, laws, physical education, national defense education; obtain current English standards equivalent to level 3/6 of Vietnam's Foreign Language Proficiency Framework (B1 according to the Common European Framework of Reference for Languages).
- G2. Summarize basic knowledge of water quality parameters, biological (morphology, physiology, nutrition,...) and ecological characteristics of aquaculture species and other aquatic organisms.
- G3. Describe methods for studying aquaculture species' biology, nutrition requirements, and water quality analyses, as well as statistical and research methods, and scientific writing.
- G4. Describe techniques of reproduction, genetic improvement, and farming technology, especially in intensive and advanced systems, of economically valuable aquaculture species.
- G5. Explain principles of aquatic animal health management, seafood product quality management, farming area planning and development for effective, sustainable, and environmentally friendly farming.

2.2 Skills

- G6. Implement seed reproduction and commercial farming techniques for economically valuable species such as striped catfish, native black fish species, black tiger shrimp, white leg shrimp and freshwater prawn.
- G7. Organize and operate hatcheries, commercial farms, fishery services business.
- G8. Develop communication skills, English skills, international academic exchange, independent and in-group working skills in study and research, information technology skills.

2.3 Attitude/Autonomy and Responsibilities

G9. Develop awareness of professional ethics, self-study and lifelong learning, and a sense of community responsibility.

G10. Have the ability to study postgraduate levels related to fisheries at national and international universities.

II. Learning outcomes

2.1. Knowledges

Learning outcomes	Explain
LO1	Application the basic knowledges of general law, social sciences and humanities, and natural sciences to respond to requirements for acquiring specialized knowledge and using knowledge of Marxist-Leninist philosophy, the policies of The Communist Party of Vietnam, Ho Chi Minh's ideology, knowledge of Military Training, Physical Education to meet the requirements of building and protecting the homeland.
LO2	Utilize language skills and apply computer software proficiently in the field of Aquaculture.
LO3	Apply fundamental knowledge of the field to related activities as well as utilize specialized knowledge to select, develop, and organize the implementation of technological processes in aquaculture such as: formulation and processing of aquafeed; aquatic pathology; preservation of aquaculture products; aquaculture infrastructure and equipment... Through this, learners adeptly utilize diagnostic methods, preventive measures for common aquatic diseases, as well as master the principles of applying beneficial microorganisms in treatment and coordination with other measures in the management of aquatic environment in aquaculture.
LO4	Mastering knowledge of scientific research methods, broad practical experience, and firmly established practical skills to analyze, synthesize, and solve specific issues in the field of aquaculture such as seed production, commercial cultivation of

	economically valuable aquatic species, specialty aquatic species; Efficiently manage and operate aquaculture production facilities; Develop and implement research projects in the field of aquaculture, initially fostering creative capacity and career development.
LO5	Apply knowledge gained from practical learning and internship experiences to future employment opportunities.
LO6	Effectively organize, manage, and operate technical processes for seed production and commercial aquaculture.
LO7	Apply knowledge of formulating aquafeed recipes and participate in operating technical processes for aquafeed production.
LO8	Organize the implementation of environmental management measures in aquaculture water pond; master diagnostic methods, preventive measures for common diseases in aquaculture.
LO9	Research, apply, and transfer technology in specialized fields; Provide specialized technical consultancy and design aquaculture facilities; Organize the implementation of aquaculture-related services.
LO10	Manage aquaculture and seafood processing businesses.

2.2. Skills

Learning outcomes	Explain
LO11	Effectively apply soft skills such as independence, dynamism, creativity; ability to collaborate, organize, lead, and work in teams; efficient communication through writing, presenting, discussing, negotiating, and handling situations) in practical work.
LO12	Proficiently utilize information technology (advanced IT skills) and foreign languages (English at level 3/6 according to the Vietnamese language proficiency framework, equivalent to a TOEIC score ≥ 450 points) to serve professional work and management.

2.3. Capacity for autonomy and responsibility

Students need to achieve autonomy and responsibility as presented in the table below for the training process to be effective.

Learning outcomes	Explain
LO13	A strong sense of civic responsibility, passion for the profession, eagerness for progress; fostering self-awareness for personal development and lifelong learning to continuously enhance professional skills throughout one's career.
LO14	Demonstrate a cooperative, objective, fair attitude, evaluate, and improve effectiveness in both work and life
LO15	Dynamic, creative, ready to work independently, scientifically, self-study, search, update, and use information to solve tasks in the field of aquaculture.

III. The content of studying program (name and credit for each subject): 150 credits (not include Military Training and Physical Education)

Total credit		
1	General knowledges	30
2	Professional knowledges	104
	- Compulsory Knowledges	91
	- Optional knowledges	13
3	Graduation	16
	- Graduation Intership	6
	- Graduation thesis (or do the minor Graduation project and study 02 alternative subjects)	10

1. General Knowledges: 30 + (11 Military Training and Physical Education) credits

Number	Code	Subject	Credits	Note
1.	0301001769	Marxist - Leninist Philosophy	3	
2.	0301001825	Marxist - Leninist Political Economy	2	
3.	0301001826	Scientific Socialism	2	
4.	0301001827	History of Vietnamese Communist Party	2	
5.	0301000665	Ho Chi Minh Ideology	2	
6.	0301000667	General law	2	

Number	Code	Subject	Credits	Note
7.	0301001673	Basic informatics	3	
8.	0301001371	Principles of Biology (General Biology)	2	
9.	0301001367	Principles of Biology Lab (Experiment on General Biology)	1	
10.	0310000908	General genetics	2	
11.	0310001773	General genetics Lab	1	
12.	0301000946	TOEIC 1	4	
13.	0301000947	TOEIC 2	4	
14.	0301001035	Physical Education 1 - Volleyball**	1	
15.	0301001036	Physical Education 1 - Football**		
16.	0301001037	Physical Education 1 - Badminton**		
17.	0301000660	Physical Education 2 - Volleyball **	1	
18.	0301001038	Physical Education 2 - Football **		
19.	0301001039	Physical Education 2 - Badminton **		
20.	0301001030	Physical Education 3 - Volleyball **	1	
21.	0301000661	Physical Education 3 - Football **		
22.	0301000662	Physical Education 3 - Badminton **		
23.	0301000650	Military Training**	8	

2. Professional knowledges: 104 credits

Number	Code	Subject	Credits	Note
1. Compulsory Knowledge				
Core				
1.	0301002341	Field trips in Aquaculture	1	
2.	0301002180	Introduction to Scientific research	2	
3.	0301000184	Analytical Chemistry Applied in Aquaculture	2	
4.	0301000591	Analytical Chemistry Practice for Aquaculture	1	
5.	0301000467	Biochemistry of Fisheries	2	
6.	0301000595	Biochemistry Lab	1	
7.	0301000537	Principles of Aquaculture	2	
8.	0301000354	Ichthyology	2	

Number	Code	Subject	Credits	Note
9.	0301001994	Morphological classification of Crustaceans and Mollusca	2	
10.	0301001995	Practical on Morphological classification of crustaceans and mollusca	1	
11.	0301000529	Phytoplankton (Aquatic plants)	2	
12.	0301001996	Aquatic Animals	2	
13.	0301001997	Aquatic Animal Practice	1	
14.	0301000475	Aquatic organism ecology	2	
15.	0301001998	Applied microbiology in Aquaculture	2	
16.	0301001999	Practical Application of Microbiology in Aquaculture	1	
17.	0301002000	Water quality management for Aquaculture Pond	2	
18.	0301002001	Water quality analysis Lab	1	
19.	0310001775	Aquatic animal physiology	2	
20.	0310001774	Aquatic animal physiology Lab	1	
21.	0301002004	Aquatic animal nutrition and Feed Technology	3	2
22.	0301002005	Aquatic Feed Formulation	1	
23.	0301002349	English for Aquaculture	2	
24.	0301000514	Basic aquaculture discipline practical training	6	
25.	0301001363	Biological Statistics	3	
Speciality				
26.	0301001409	Scientific Research in Aquaculture	2	
27.	0301000263	Freshwater fish breeding technology	2	
28.	0301000260	Freshwater fish farming	2	
29.	0301000264	Seed production and farming of marine fish	2	
30.	0301002342	Seed production of Crustacean	3	
31.	0301002343	Farming of Crustacean	3	
32.	0301000092	Fish genetics and selective breeding	2	
33.	0301002344	Crustacean Diseases	3	
34.	0301002345	Fish Diseases	3	
35.	0301002346	Aquatic Animal Health Management	2	
36.	0301000587	Specialized Training in Freshwater Aquaculture	6	
37.	0301000586	Specialized Training in Brackishwater Aquaculture	6	
38.	0301002011	Aquaculture Economic	3	2
39.	0301002012	Aquaculture Economic Practice	1	

Number	Code	Subject	Credits	Note
40.	0301000078	Facilities for Aquaculture	2	
41.	0301000533	Drugs and chemical in Aquaculture	2	
2. Optional Knowledges				
		Optional of General Knowledge 2 credits		
42.	0301000643	Overview of Sociology	2	
43.	0301000603	General management documents and archives	2	
44.	0301000288	General Logic	2	
		Optional of core 11 credits		
45.	0301002355	Fisheries Resource Management and Conservation.	2	
46.	0301002006	Environmental Impact Assessment in Aquaculture	2	
47.	0301002351	Histology and Embryology of aquatic Animal	2	
48.	0301002008	Aquatic food safety	2	
49.	0301002356	Indicator Species	2	
50.	0301000262	Live food culture	2	
51.	0301002357	Breeding and feeding special fish	2	
52.	0301002358	Aquaculture Techniques for Ornamental Fish	3	
53.	0301000261	Molluscan shellfish framing	2	
54.	0301000239	Aquatic products preservation and processing techniques	2	
55.	0301001347	Marketing in aquaculture and fisheries	2	

3. Graduation: 16 credits

Number	Code	Subject	Credits	Note
1. Graduation Internship:				
1.	0301002072	Dissertation – Professional	6	
2. Graduation thesis:				
2.	0301002347	Form 1: Graduation thesis	10	
3.	0301002348	Form 2: Graduation research on Aquaculture	6	
4.	0301000577	Comprehensive basic knowledge on Aquaculture	2	4
5.	0301000578	Review on technology for Aquaculture and fishery management	2	

Number	Code	Subject	Credits	Note
6.	0301002013	Advances in Technology Freshwater Aquaculture	2	4
7.	0301002014	Advances in Technology Brackishwater Aquaculture	2	