

**CAN THO UNIVERSITY
COLLEGE OF AQUACULTURE & FISHERIES**



PROGRAMME SPECIFICATIONS

**PROGRAMME: BACHELOR OF ENGINEERING
IN AQUACULTURE (ADVANCED PROGRAMME)**

Can Tho, 2022

**PROGRAMME SPECIFICATION
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(ADVANCED PROGRAMME)**

I. PROGRAMME SPECIFICATION

1. General information of the programme

Study programme	Advanced Aquaculture
Programme Code	7620301
Awarding institution	Can Tho University
Degree	Engineer in Aquaculture
Training Level	Undergraduate (Bachelor)
Number of credits accumulated	160 credits
Mode of training	Regular, full-time
Training time	4.5 years.
Candidate:	People with high school diploma or equivalent
Grading scale	4-point
Eligibility for graduation	<ul style="list-style-type: none">- Accumulate enough courses and credits specified in the programme with the cumulative GPA of the whole programme is 2.0 or higher (on a 4-point scale);- Complete all compulsory courses. In addition, the overall GPA of the National Defence Education courses must be 5.0 or higher (on a 10-point scale);- Not being prosecuted for criminal responsibility, not being suspended at the last school year due to violating CTU's regulation
Career prospects	<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.

	<ul style="list-style-type: none"> - Fisheries extension officers, fisheries development planners and managers at national fisheries agencies and international organizations. - Research and teaching staff at universities, colleges, high schools, fisheries research institutes. - Technical consultants of international fisheries development and certification organizations. - Production farm owner, independent trading company.
- higher education after graduation	<ul style="list-style-type: none"> - Have the ability to study postgraduate levels related to fisheries at national and international universities. - Have the ability to self-study, research and apply science and technology to practical production.
References when developing the programme	<ul style="list-style-type: none"> - Aquaculture curricula applied in famous universities in the same field, including Auburn University (USA), Tasmania University (Australia), and Hawaii University (USA). - General curricula for Agriculture-Forestry and Aquaculture, issued by the Ministry of Education and Training (09/2011/TT-BGDĐT, on 24 February 2011)
Information about accreditation at programme level	<ul style="list-style-type: none"> - Certificate of quality assessment according to AUN-QA criteria 2014. - Certificate of internal accreditation of study programme of Can Tho University in ?? - Certificate of quality assessment according to the standard of Vietnam Ministry of Education and Training. - Certificate of quality re-assessment according to AUN-QA criteria: (in progress)
Time to update the programme specification	4/2022

2. The BSLM programme has the following objectives.

2.1. Overall goal of the program

The overall goal of the program is to train Aquaculture engineers with basic knowledge, professional knowledge on aquaculture and professional skills, and the ability to work independently, directly undertake technical and management work at aquatic production facilities, capable of doing consulting, research, and management work in colleges/universities and institutions, have the ability to self-study and continue to study at a higher level. They can be able to use English fluently to study, research and work at domestic and foreign aquaculture establishments and organizations.

2.2. Program's specific objectives (POs)

- 1) To equip students with knowledge of basic sciences, social sciences, politics – society, laws, national defense education, English, and information technology so as to lay their basis for the acquisition of further and professional knowledge
- 2) To train students for principles, fundamental and specialized aquaculture knowledge such as biology, ecology and aquaculture environment

- 3) To train students for professional skills including reproduction and farming techniques of important aquaculture species; use of common equipment in aquaculture, management and operation of aquaculture hatcheries, farms, feed factories, or services relating to aquaculture and aquatic animal processing plants.
- 4) To instruct students on health training, communication skills and professional manners; scientific research skills and lifelong learning; develop among students a sense of citizenship and professional responsibility.

3. Expected Program Learning Outcomes (PLOs)

Upon completing the AA Programme, students demonstrate the ability to:

General knowledge

1. Generalize knowledge of basic sciences, social sciences, politics – society, laws, physical education, national defense education; obtain current English standards equivalent to level 4/6 of Vietnam's Foreign Language Proficiency Framework (B2 according to the Common European Framework of Reference for Languages)

Fundamental aquaculture knowledge

2. Summarize basic knowledge of water quality parameters, biological (morphology, physiology, nutrition,...) and ecological characteristics of aquaculture species and other aquatic organisms.
3. Describe methods for studying aquaculture species' biology, nutrition requirements, and water quality analyses, as well as statistical and research methods, and scientific writing

Specialized aquaculture knowledge

4. Describe techniques of reproduction, genetic improvement, and farming technology, especially in intensive and advanced systems, of economically valuable aquaculture species.
5. Explain principles of aquatic animal health management, seafood product quality management, farming area planning and development for effective, sustainable, and environmentally friendly farming.

Hard skills

6. 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
7. Organize and operate hatcheries, commercial farms, fishery services business.

Soft skills

8. Develop communication skills, English skills, international academic exchange, independent and in-group working skills in study and research, information technology skills

Attitudes/Autonomy and Responsibilities

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

4. Admission criteria

Pursuant to MOET's regulations on admission criteria and CTU's yearly enrolment plan

5. Correlation matrix between POs and PLOs

5.1. Correlation matrix between POs and PLOs

Programme Objective (POs)	Expected Learning Outcomes (PLOs)								
	General knowledge	Fundamental knowledge		Specialized knowledge		Hard skills		Soft skills	Attitude
	1	2	3	4	5	6	7	8	9
1	X								
2		X	X						
3				X	X	X	X		
4								X	X

5.2. Correlation matrix between courses and PLOs

Course			PLOs								
			Knowledge					Skills		Attitude	
			General knowledge	Fundamental knowledge		Specialized knowledge		Hard skills	Soft skills		
No	Code	Course name	1	2	3	4	5	6	7	8	9
General courses											
1	FL001H	Listening and speaking 1	X							X	X
2	FL002H	Listening and speaking 2	X							X	X
3	FL003H	Reading 1	X							X	X
4	FL004H	Reading 2	X							X	X
5	FL005H	Writing 1	X							X	X
6	FL006H	Writing 2	X							X	X
7	FL007H	Grammar in use	X							X	X
8	FL008H	English pronunciation in use	X							X	X
9	FL009H	Presentation skills	X							X	X
10	QP010	Military training 1	X							X	X
11	QP011	Military training 2	X							X	X
12	QP012	Military training 3	X							X	X
13	QP013	Military training 4	X							X	X
14	TC100	Physical training 1+2	X							X	X
15	TC013	Physical training (Swimming)	X							X	X
16	ML014	Marxist – Leninist philosophy	X							X	X
17	ML016	Marxist – Leninist political economy	X							X	X
18	ML018	Science socialism	X							X	X
19	ML019	History of the Communist Party of Vietnam	X							X	X
20	ML021	Ho Chi Minh’s thought	X							X	X

Course			PLOs								
			Knowledge					Skills		Attitude	
			General knowledge	Fundamental knowledge	Specialized knowledge		Hard skills	Soft skills			
No	Code	Course name	1	2	3	4	5	6	7	8	9
21	TN051	General chemistry I	X							X	X
22	TN052	Fundamental chemistry-I Laboratory	X							X	X
23	TN053	Fundamental chemistry II	X							X	X
24	TN054	Fundamental chemistry-II Laboratory	X							X	X
25	TN057	General biology	X							X	X
26	TN058	Practical general biology	X							X	X
27	AQ059	Advanced mathematics	X							X	X
28	ML007	General logic	X							X	X
29	XH011	Basic Vietnamese culture	X							X	X
30	XH012	Vietnamese in use	X							X	X
31	XH014	General management document and archives	X							X	X
32	XH028	Overview of Sociology	X							X	X
33	KN001	Transferable skills								X	X
34	KN002	Entrepreneurship and innovation								X	X
Aquaculture fundamental courses											
35	AQ101	English for Aquaculture I	X							X	X
36	AQ102	English for Aquaculture II	X							X	X
37	AQ218	Water quality analysis		X	X			X		X	X
38	AQ205C	Microbiology		X	X			X		X	X
39	AQ206	Introduction to aquaculture and fisheries science		X	X					X	X
40	AQ207	Water science		X			X	X		X	X
41	AQ208	General ichthyology		X	X			X		X	X
42	AQ209	Limnology		X	X			X		X	X
43	AQ210	Principles of ecology		X				X		X	X
44	AQ211	Aquatic animal physiology		X	X	X		X		X	X
45	AQ212	Aquatic animal nutrition		X	X		X	X		X	X
46	AQ214	Applied statistics and experimental design			X					X	X
47	AQ216	Scientific research methodology			X					X	X
48	AQ217	Practice on fundamental disciplines		X	X		X	X		X	X
49	AQ220	Biology of fishes		X	X			X		X	X
Aquaculture courses											
50	AQ301	Aquaculture production				X		X	X	X	X
51	AQ222	Hatchery operation and management				X	X	X	X	X	X
52	AQ303	Shellfish aquaculture		X		X		X		X	X
53	AQ223	Shellfish hatchery operation and management				X	X	X	X	X	X
54	AQ305	Introduction to fish health and clinical fish disease diagnosis					X	X		X	X
55	AQ306C	Fish and shellfish diseases		X			X	X		X	X
56	AQ307	Fish genetic enhancement and resources management				X		X		X	X
57	AQ308	Fisheries biology and management				X		X		X	X
58	AQ224	Facilities for aquaculture					X		X	X	X

Course			PLOs								
			Knowledge					Skills		Attitude	
			General knowledge	Fundamental knowledge	Specialized knowledge	Hard skills	Soft skills				
No	Code	Course name	1	2	3	4	5	6	7	8	9
59	AQ310	Live food culture				X	X	X		X	X
60	AQ312C	Aquaculture economics				X			X	X	X
61	AQ313	Fisheries laws					X		X	X	X
62	AQ225	Practice on aquaculture				X	X	X	X	X	X
63	AQ315	Seminar/special study				X	X	X	X	X	X
64	AQ226	Internships		X	X	X	X	X	X	X	X
65	AQ311	Planning for aquaculture development				X	X		X	X	X
66	AQ227	Food quality management and safety					X		X	X	X
67	AQ228	Biotechnology in aquaculture				X		X		X	X
68	AQ229	Aquatic biomonitoring				X		X		X	X
69	AQ502	Graduation thesis		X	X	X	X	X	X	X	X

II. PROGRAMME STRUCTURE AND CURRICULUM

Pursuant to the Decision No. 2435/QĐ-DHCT dated August 31st, 2020 of the Rector of Can Tho University (CTU) on the promulgation of the undergraduate study programme, the Bachelor of the Advanced Aquaculture Programme is described as follows:

1. Programme Structure

The minimum number of credits accumulated: 160 credits

General knowledge: 56 credits (compulsory: 52 credits; elective: 4 credits)

Fundamental knowledge: 41 credits (compulsory: 41 credits)

Specialised knowledge: 63 credits (compulsory: 59 credits; elective: 4 credits)

2. Curriculum

No		Course name	Number of credits	Compulsory	Elective	Theory hours	Practice hours	Prerequisite course	Semester
English bridging program									
1	FL001H	Listening and speaking 1 (*)	3	3		45			I,II
2	FL002H	Listening and speaking 2 (*)	2	2		30			I,II
3	FL003H	Reading 1 (*)	2	2		30			I,II
4	FL004H	Reading 2 (*)	2	2		30			I,II
5	FL005H	Writing 1 (*)	2	2		30			I,II
6	FL006H	Writing 2 (*)	2	2		30			I,II
7	FL007H	Grammar in use (*)	3	3		45			I,II
8	FL008H	Pronunciation in practice (*)	2	2		30			I,II
9	FL009H	Presentation skills (*)	2	2		30			I,II
Total: 20 credits compulsory									
General course									
10	QP010	Military training 1 (*)	2	2		37	8	Divided by specialised sub-group	
11	QP011	Military training 2 (*)	2	2		22	8		
12	QP012	Military training 3 (*)	2	2		14	16		
13	QP013	Military training 4 (*)	2	2		4	56		
14	TC100	Physical training 1+2 (*)	2		2		60		I,II,III
15	TC013	Physical training (Swimming) (*)	1	1			30		I,II
16	ML014	Marxist – Leninist philosophy	3	3		45			I,II,III
17	ML016	Marxist – Leninist political economy	2	2		30		ML014	I,II,III
18	ML018	Science socialism	2	2		30		ML016	I,II,III
19	ML019	History of the Communist Party of VN	2	2		30		ML018	I,II,III
20	ML021	Ho Chi Minh's thought	2	2		30		ML019	I,II,III
21	TN051	General chemistry I	2	2		30			I,II
22	TN052	Fundamental chemistry-I Laboratory	1	1			30		I,II
23	TN053	Fundamental chemistry II	2	2		30			I,II
24	TN054	Fundamental chemistry-II Laboratory	1	1			30		I,II
25	TN057	General biology	2	2		30			I,II,III
26	TN058	Practical general biology	1	1			30		I,II,III
27	AQ059	Advanced mathematics	3	3		45			I,II
28	ML007	General logic	2		2	30			I,II,III
29	XH011	Basic Vietnamese culture	2			30			I,II,III

30	XH012	Vietnamese in use	2			30			I,II,III
31	XH014	General management document and archives	2			30			I,II,III
32	XH028	Overview of Sociology	2			30			I,II,III
33	KN001	Transferable skills	2			20	20		I,II,III
34	KN002	Entrepreneurship and innovation	2			20	20		I,II,III
Total: 36 credits (Compulsory: 32 credits; Elective: 4 credits)									
Fundamental Aquaculture									
35	AQ101	English for Aquaculture I	2	2		30			I,II
36	AQ102	English for Aquaculture II	2	2		30			I,II
37	AQ218	Water quality analysis	3	3		30	30		I,II
38	AQ205C	Microbiology	3	3		30	30		I,II
39	AQ206	Introduction to aquaculture and fisheries science	3	3		45			I,II
40	AQ207	Water science	3	3		45			I,II
41	AQ208	General ichthyology	3	3		45			I,II
42	AQ209	Limnology	3	3		30	30		I,II
43	AQ210	Principles of ecology	2	2		30			I,II
44	AQ211	Aquatic animal physiology	3	3		30	30		I,II
45	AQ212	Aquatic animal nutrition	3	3		30	30		I,II
46	AQ214	Applied statistics and experimental design	3	3		30	30		I,II
47	AQ216	Scientific research methodology	2	2		30			I,II
48	AQ217	Practice on fundamental disciplines	4	4			120		I,II,III
49	AQ220	Biology of fishes	2	2		30			I,II
Total: 41 credits (Compulsory: 41 credits)									
Specialized Aquaculture courses									
50	AQ301	Aquaculture production	4	4		45	30		I,II
51	AQ222	Hatchery operation and management	3	3		30	30		I,II
52	AQ303	Shellfish aquaculture	3	3		45			I,II
53	AQ223	Shellfish hatchery operation and management	3	3		30	30		I,II
54	AQ305	Introduction to fish health and clinical fish disease diagnosis	3	3		30	30		I,II
55	AQ306C	Fish and shellfish diseases	3	3		30	30		I,II
56	AQ307	Fish genetic enhancement and resources management	3	3		45			I,II
57	AQ308	Fisheries biology and management	3	3		30	30		I,II
58	AQ224	Facilities for aquaculture	2	2		30			I,II
59	AQ310	Live food culture	2	2		20	20		I,II
60	AQ312C	Aquaculture economics	3	3		45			I,II
61	AQ313	Fisheries laws	2	2		30			I,II
62	AQ225	Practice on aquaculture	5	5			150		I,II
63	AQ315	Seminar/special study	1	1			30		I,II
64	AQ226	Internships	5	5			150		III
65	AQ311	Planning for aquaculture development	2		4	30			I,II
66	AQ227	Food quality management and safety	2			30			I,II
67	AQ228	Biotechnology in aquaculture	2			30			I,II
68	AQ229	Aquatic biomonitoring	2			30			I,II
69	AQ502	Graduation thesis	14	14			420		I,II
Total: 63 credits (Compulsory: 59 credits; Elective: 4 credits)									
Total: 140 credits (Compulsory: 132 credits, Elective: 8 credits) and 20 credits of English bridging program									

(*): conditional courses, pass required but not included in GPA. Students must pass the exams of National Defence Education, Physical Education and English (or French) as specified by CTU. Students can complete the above courses by submitting certificates according to CTU's regulations or cumulative study.

3. Study Plan

No	Code	Course name	Number of credits	Compulsory	Elective	Theory hour	Practice hours	Prerequisite course	Notes
Year 1									
Semester 1									
1	FL001H	Listening and speaking 1 (*)	3	3		45			I, II
2	FL003H	Reading 1 (*)	2	2		30			I, II
3	FL005H	Writing 1 (*)	2	2		30			I, II
4	FL007H	Grammar in use (*)	3	3		45			I, II
5	FL008H	Pronunciation in practice (*)	2	2		30			I, II
6	FL009H	Presentation skills (*)	2	2		30			I, II
		Total	14	14	0				
Semester 2									
1	FL002H	Listening and speaking 2 (*)	2	2		30			I, II
2	FL004H	Reading 2 (*)	2	2		30			I, II
3	FL006H	Writing 2 (*)	2	2		30			I, II
4	ML014	Marxist – Leninist philosophy	3	3		45			I, II, III
5	AQ059	Advanced mathematics	3	3		45			I, II
6	TN051	General chemistry I	2	2		30			I, II
7	TN052	Fundamental chemistry – I Laboratory	1	1			30		I, II
8	TN057	General biology	2	2		30			I, II
9	TN058	Practical general biology	1	1			30		I, II, III
10	AQ201	English for Aquaculture I	2	2		30			I, II
		Total	20	20	0				
Semester 3-SUMMER									
1	QP010	Military training 1 (*)	2	2		37	8		
2	QP011	Military training 2 (*)	2	2		22	8		
3	QP012	Military training 3 (*)	2	2		14	16		
4	QP013	Military training 4 (*)	2	2		4	56		
		Total	8	8	0				
Year 2									
Semester 4									
1	TN053	Fundamental chemistry II	2	2		30			I, II
2	TN054	Fundamental chemistry – II Laboratory	1	1			30		I, II
3	ML016	Marxist – Leninist political economy	2	2		30		ML014	I, II, III
4	AQ202	English for Aquaculture II	2	2		30			I, II
5	AQ206	Introduction to aquaculture and fisheries science	3	3		45			I, II
6	AQ209	Limnology	3	3		30	30		I, II
7	TC100	Physical training 1	1		1		30		I, II, III
8	AQ218	Water quality analysis	3	3		30	30		I, II
		Total	17	16	1				

Semester 5									
1	ML018	Science Socialism	2	2		30		ML016	I, II, III
2	AQ208	General ichthyology	3	3		45			I, II
3	AQ211	Aquatic animal physiology	3	3		30	30		I, II
4	AQ210	Principles of ecology	2	2		30			I, II
5	AQ212	Aquatic animal nutrition	3	3		45			I, II
6	TC100	Physical training 2*	1		1		30		I, II, III
7	AQ207	Water science	3	3		45			I, II
		Total	17	16	1				
Semester 6 - SUMMER									
1	AQ217	Practice on fundamental disciplines	4	4			120		I, II, III
2	TC013	Physical training (Swimming)(*)	1	1			30		I, II
		Total	7	7	0				
Year 3									
Semester 7									
1	ML019	History of the Communist Party of Vietnam	2	2		30		ML018	I, II, III
2	FL100H	Thi đánh giá năng lực tiếng Anh*	2	2		30			I, II, III
3	AQ205C	Microbiology	3	3		30	30		I, II
4	AQ214	Applied statistics and experimental design	3	3		30	30		I, II
5	AQ220	Biology of fishes	2	2		30			I, II
6	AQ224	Facilities for aquaculture	2	2		30			I, II
7	ML021	Ho Chi Minh 's thought	2	2		30		ML019	I, II, III
		Total	16	16	0				
Semester 8									
1	KN002	Entrepreneurship and innovation	2		2	20	20		I, II, III
2	KN001	Transferable Skills	2		2	20	20		I, II, III
3	AQ305	Introduction to fish health and clinical fish disease diagnosis	3	3		30	30		I, II
4	AQ222	Hatchery operation and management	3	3		30	30		I, II
5	AQ301	Aquaculture production	4	4		45	30		I, II
6	AQ216	Scientific research methodology	2	2		30			I, II
7	AQ310	Live food culture	2	2		20	20		I, II
		Total	16	14	2				
Semester 9- Summer									
1	AQ226	Internship	5	5			150		III
		Total	5	5	0				
Year 4									
Semester 10									
1	AQ306C	Fish and shellfish diseases	3	3		30	30		I, II
2	AQ303	Shellfish aquaculture	3	3		45			I, II
3	AQ223	Shellfish hatchery operation and management	3	3		30	30		I, II
4	AQ228	Biotechnology in aquaculture	2		2	30			I, II
5	AQ307	Fish genetic enhancement and resources management	3	3		45			I, II

6	AQ315	Seminar/ Special study	1	1			30		I, II
		Total	15	13	2				
Semester 11									
1	AQ311	Planning for aquaculture development	2		2	30			I, II
2	AQ312C	Aquaculture economics	3	3		45			I, II
3	AQ313	Fisheries law	2	2		30			I, II
4	AQ308	Fisheries biology and management	3	3		30	30		I, II
5	AQ225	Practice on aquaculture	5	5			150		III
		Total	15	13	2				
Year 5									
Semester 12									
1	AQ502	Graduation thesis	14	14			450		I, II
		Total	14	14	0				
		Overall	160	152	8				

4. Brief outline of all courses in the programme

No	Code	Course name	Number of credits	Brief description of the course	Administration unit
1-9	FL001H-FL009H	English bridging program	20	This course provides students English skills including Listening, Speaking, Reading, Writing, Pronunciation, Grammar and Presentation. It will help to improve English skills for students and prepare basic knowledge in English for later courses.	School of Foreign Languages
10	QP010	Military training 1 (*)	2	This course presents the Party's basic theory of the military policy, including: the basic issues Marxist-Leninist Theory, Ho Chi Minh's thought on war, the army and the defence of the country; Party's views on the people war, building the armed forces, the all-people defence, the people's security; the Party's views on combining socio-economic development with strengthening national defence and security. In addition, the course introduces some basic contents about the history of Vietnamese military art through the periods.	Center for National Defence Education
11	QP011	Military training 2 (*)	2	This course presents the basic contents of the defence and security tasks of the Party and State in the new situation, including: building the militia, self-defence, mobilization reserve force; increasing the potentials of national defence and technical and material foundations; defeating the strategy of "peaceful evolution", and riot to overthrow hostile forces toward the Vietnamese revolution. The course addresses a number of issues of ethnicity, religion and the fight against the enemies who take advantage of issues of ethnicity and religion to fight the	Center for National Defence Education

				Vietnamese revolution, building and protecting border sovereignty, sovereignty over islands, national security, fighting crime prevention and maintaining social order and safety, combating non-traditional security threats in Vietnam.	
12	QP012	Military training 3 (*)	2	The course provides theory combined with practice to provide students with some basic skills to practice shooting with pistols, basic knowledge of maps, military terrain, and combat against the enemies with a weapon. high-tech gas, forging bravery and health through military content, training for class and block formation. The contents of the course include the followings: unit team (platoon level); training combat skills; commanding combat units; combat synergies in attack and defence	Center for National Defence Education
13	QP013	Military training 4 (*)	2	The course introduces the history, traditions of the army, the army, the organization of the forces of the army, visiting to learn the history, units in the armed forces. The course helps students: 1) master basic knowledge about the military in the Vietnam People's Army; 2) raising awareness in building, consolidating the people's armed forces, being ready to join militia and self-defense force, reserve mobilization and military service; and 3) training for quality, strong political bravery, patriotism, love of socialism and building and strengthening the people's armed forces	Center for National Defence Education
14	TC100	Physical training 1+2	2	Physical Education 1+2 is a general course that represents the Physical Education courses. All students who are not majoring in Physical Education must study these courses to complete the curriculum of their majors. To complete the Physical Education courses, the students do not register for course TC100, instead, students must register for each specific course depending on their ability and desire to learn. For example, if a student wants to learn Taekwondo, they register for the following 3 modules: Taekwondo 1 (TC003), Taekwondo 2 (TC004) and Taekwondo 3 (TC019). The other Physical Education courses are the same	Physical Education
15	TC013	Physical training (Swimming) (*)	1	The contents of the course include introduction of origin, history and development of swimming and its effects to learners. Besides, the students will learn techniques to be familiar under water environment, practice exercises how to float, breath and stand in the water. Breaststroke and water safety regulations are also taught to	Physical Education Department

				students.	
16	ML014	Marxist – Leninist philosophy	3	This course provides students with basic and in-depth knowledge of Marxist-Leninist philosophy, including philosophy and its role in social life; Marxist-Leninist philosophy and its role in social life; dialectical materialism: matter and consciousness, materialistic dialectic and cognitive reasoning; historical materialism: socio-economic morphology, class and nation, state and social revolution, man's social consciousness and philosophy.	College of Political Science
17	ML016	Marxist – Leninist political economy	2	In this course, students are provided with basic and in-depth knowledge of Marxist-Leninist political economy, including subjects, research methods and functions of Marxist-Leninist Political Economy; goods, the market and the role of actors when participating in the market; surplus values in the market economy; competition and monopoly in the market economy; the socialist-oriented market economy and economic interest relations in Vietnam.	College of Political Science
18	ML018	Science Socialism	2	In this course, students will study the common theoretical issues of socialism and practice in the construction of socialism in our country today. The course content mainly focuses on several issues such as: the birth and development of scientific socialism; the historic mission of the working class, socialism and the transition to socialism; socialist democracy and a socialist state; alliances of class, class; ethnicity, religion issues; the family problem in the transition to socialism.	College of Political Science
19	ML019	History of the Communist Party of Vietnam	2	The course equips students with the understanding of objects, purposes, tasks, research methods, learning of the Party History course and the basic, core and systematic knowledge about the Party's birth (1920-1930), the Party leadership process in the struggle for power (1930-1945), leading in two resistance wars against the French colonialists and American imperialists, completing national liberation, unification of the country (1945-1975), transitional leadership to socialism and national renewal (1975-2018). Thereby, the course affirms the successes, raises the limitations, summarizes the experiences of the revolutionary leadership of the Party to help learners increase awareness, belief in the Party and the ability to apply knowledge, which has just been learned, into practical work to contribute to building and defending the	College of Political Science

				Socialist Vietnam Fatherland.	
20	ML021	Ho Chi Minh 's thought	2	Together with Marxist-Leninist Philosophy, Marxist-Leninist Political Economy, Scientific Socialism, History of the Communist Party of Vietnam, this course creates an understanding of the ideological foundation, the guideline for the Party's actions and our country's revolution. It continues to provide basic knowledge about Marxism-Leninism, contributing to building a new human moral foundation. The course consists of 6 chapters, which present the basic contents of Ho Chi Minh's Thought according to the objectives of the module, providing a systematic understanding of Ho Chi Minh's ideology, morality and values.	College of Political Science
21	TN051	General chemistry I	2	In this course, students will gain an understanding of: the basic (colligative) properties of solutions; the fundamentals of acid/base equilibria, including pH calculations, buffer behavior, acid/base titrations; general chemical equilibria; and solubility equilibria.	College of Natural Sciences
22	TN052	Fundamental chemistry – I Laboratory	1	This course will provide students with experiments focusing on solubility product constant, K_{sp} ; acid-base titration; heat of reaction; determination molecular weight of compound through measuring freezing-point depression; reaction rate; electrochemistry. Besides, the course is also designed to develop fundamentals of laboratory techniques, data collection and data analysis. Through the experiments, students reinforce and promote an understanding of the principles of gases, liquids, solids, energy and chemical reactions.	College of Natural Sciences
23	TN053	Fundamental chemistry II	2	This course aims to supply the student with: most basic knowledge about organic compounds, their physical, chemical properties, nomenclature and preparations; overview about isomers and chiral in organic chemistry; concept of structure, solubilities, and acid-base properties of organic substances. Some general characteristics of organic molecules include chemistry of hydrocarbons; chemistry of functional Groups: Alcohols and Ethers; compounds with a carbonyl group; and introductions to Biochemistry, Proteins, Carbohydrates, Nucleic Acids.	College of Natural Sciences
24	TN054	Fundamental chemistry – II Laboratory	1	This course provides basic knowledge of organic laboratory techniques including distillation methods and measuring physical properties such as melting points, recrystallization, chromatography, and	College of Natural Sciences

				synthesis. Students can know and carry out the synthesize procedures of organic compounds and the methods to determine the structures of synthesized compounds.	
25	TN057	General biology	2	The objective of the course is to introduce students to various themes in biology at molecular and cellular level, including structures and cellular functions of macromolecules; structure-function relationships in cellular structures and processes; energy transductions; genetic mechanisms; control of gene expression; and fundamentals of current issues in biotechnology. These basic knowledge will be useful for students to understand more advanced courses related to biology.	College of Natural Sciences
26	TN058	Practical general biology	1	This practical course will illustrate knowledge that students learned from the theoretical course on General Biology 1. Students will be able to prepare slides for visualization of several sub-cellular structures, to recognize different stages of the cell division process, to visualize giant chromosomes under the microscope; to examine factors influencing the activity of enzyme; and to perform electrophoresis.	College of Natural Sciences
27	AQ059	Advanced mathematics	3	This course aims to supply students with the most basic knowledge of Advanced Mathematics such as systems of equations, functions, limits, continuity, derivative, differential, integral and function of several variables. Through the obtained knowledge, students can solve real-world problems and study other courses using mathematics.	College of Aquaculture and Fisheries (CAF)
28	ML007	General logic	2	This course provides knowledge of formal logic, the rules and requirements of the basic laws of thinking such as: Law of uniformity; the law of noncontradiction; the third law of rejection; the law of reason; the basic forms of thinking like: concept; judgement; deductive; hypothesis; demonstration; rejection and sophistry.	College of Political Science
29	XH011	Basic Vietnamese culture	2	This course is organized into 6 chapters from theory to practical. Chapter 1 will introduce definitions, scientific terminologies (<i>culture, culturology, structure, process, space, and cultural types...</i>) as the premises for next chapters. From chapter 2 to 5, the lectures will present knowledge from aspects from cognitive culture, life organization culture (individual and community) to behavioral culture (natural and social).	School of Education
30	XH012	Vietnamese in use	2	This course is organized into 4 chapters. Each chapter includes 2 parts theory and practical exercises. Chapter 1 focuses on writing and	School of Education

				spelling. Chapter 2 focuses on practicing word skills. Chapter 3 teaches students about sentences. Chapter 4 trains students' skills in creating and using texts.	
31	XH014	General management documents and archives	2	This course provides students with theoretical knowledge and practical skills of management documents and archives. It helps the students to realize the role of administrative documents and archives in management. In addition, this module also helps learners to master the systematic methods of editing and managing various types of administrative documents; know how to select and classify documents for archiving; know how to search, use archives to be able to do a good job of management at schools as well as at agencies in general.	School of Social Sciences and Humanities
32	XH028	Overview of sociology	2	In this course, students study the law, the law of formation, the movement to change the relationship, the interaction between people and society. The research objects of Sociology are social relations, social interactions presented through behavior between people in groups, organizations, and social systems.	School of Social Sciences and Humanities
33	KN001	Transferable Skills	2	The course provides basic knowledge and instructions to train the necessary skills for learners: communication skills, general principles of communication; effective listening, speaking, and presentation skills; team work skills to ensure good cooperation in learning and working; creative thinking skills; time management skills and emotional management skills.	Center for Students Consultancy, Assistancy and Start-up
34	KN002	Entrepreneurship and innovation	2	The content of the course focuses on general knowledge about creating, innovating and developing startup ideas, choosing the type of business ownership, and having basic knowledge of intellectual property rights. In addition, students are also provided with basic knowledge and skills about the market such as assessment of strengths, opportunities, threats, risks of commercializing products from business ideas, discovering business potential and developing start-up planning. More importantly, students have the opportunity to gain experience shared by successful entrepreneurs and/or visit successful startup models.	Center for Students Consultancy, Assistancy and Start-up
35	AQ201	English for Aquaculture I	2	The course covers basic English terms and knowledge in biological fields of aquaculture including aquatic animal morphology, species taxonomy, water quality, nutrition and feeding, fish genetics and selective	CAF

				breeding, fish/shrimp diseases-classification/aetiological agent/transmission pathways/diagnostics/treatments.	
36	AQ202	English for Aquaculture II	2	The course covers most of the important aspects that are mostly encountered in aquaculture to provide as much as possible vocabularies and terminologies in many different fields of aquaculture as a tool to help students read, understand specialized documents. All the involved aspects include (1) Aquaculture and Fishery introduction, (2) Fish taxonomy, (3) Fish nutrition requirement, (4) Water quality management in aquaculture, (5) Marine fish culture, and (6) Shrimp culture. In addition to illustrating and offering the lexical resources in specific papers or articles, students will be requested to prepare and present topics related to fish/shrimp biology, ecology, aquatic invertebrates, vertebrates, algae, aquatic plants management, culture techniques, etc.	CAF
37	AQ218	Water quality analysis	3	The course “Water quality analysis” provides the aquaculture bachelor students knowledge in the standards methods for wastewater and water examination, and the methods for the solution preparation. The methods for water sampling and preservation as well as the physical and chemical principles in water quality analyses in surface water, coastal water, and aquaculture ponds. In addition, the students have capacities in data analysis, and quality control and quality assurance in measurements.	CAF
38	AQ205C	Microbiology	3	The course provides knowledge on the history of microbiology and roles of microorganisms in nature and human life, prokaryotes, eukaryotes, virus, microbial nutrition and growth, microbial genetics and aquatic microorganisms and pathogens of aquatic organisms. In addition to the theory, basic microbiological techniques in aquaculture will also be included.	CAF
39	AQ206	Introduction to aquaculture and fisheries science	3	The course will (1) introduce students the global, national and the Mekong delta context of aquaculture and fisheries (including aquaculture, capture fishery, aquatic resource management and development, seafood processing and marketing); (2) analyze the natural conditions and potential of Vietnam in aquaculture and fisheries; (3) basic information about major aquaculture production systems; (4) explain principles of aquaculture production (focussing on factors affecting the carrying capacity of production systems); and (5) visit major aquaculture	CAF

				production systems and location in the Mekong delta such as hatcheries, grow-out farms, processing factories, fishing ports, markets, etc. In addition, the course also approach different teaching methods to enhance learning capability of students	
40	AQ207	Water science	3	The course “Water science” provides undergraduate students knowledge of the changes and interactions between aquatic animals and the environment including physical, chemical and biological factors. On successful completion of the module, students will gain knowledge about the reasonable methods for water quality management in aquaculture ponds.	CAF
41	AQ208	General ichthyology	3	The course will be concluded in three contents as an introduction to fish ichthyology, structure and form of fish, classification of fishes, and classification of shrimp.	CAF
42	AQ209	Limnology	3	The course will provide students knowledge on chemical, physical, geological, biological, and ecological processes that influence the structure and function of aquatic communities; common aquatic plants, animals found in the ecosystems; the ecological relations among organisms in the ecosystems.	CAF
43	AQ210	Principles of ecology	2	The course will provide students knowledge on ecological processes, the ecological components and their interactions; common ecosystems and adaptation of organisms in the ecosystem; impacts of humans on ecosystems and measures to sustain ecosystems.	CAF
44	AQ211	Aquatic animal physiology	3	This course will give students with the knowledge of understanding on the characteristics of living, structure and function of organs of aquatic animals and relationship to the environment. (i) The knowledge of hematological physiology of fish and shrimp, the function of red blood cells, white blood cells and thrombocytes related to respiration, health and blood clotting. (ii) The course will cover the concepts of respiratory physiology related to the metabolism and environmental factors, the effects of toxin (as pesticide, chemical.. in the water) on respiration of fish and shrimp. (iii) The activity of the digestive enzymes in the stomach and intestines of fish, the absorption and metabolism of nutrients in the body of fish, and crustaceans are presented. (iv) The knowledge of the function of hormones related to growth and reproduction	CAF

				of fish, crustaceans are also presented in this course. (v) Structure of exoskeleton and the mechanism of molting, and other factors affecting the molting of crustaceans are also in this discipline. At the same time, the practice lessons and project experiments in this course will help students familiar with some methods for research on hematological physiology and the influence of environmental factors and toxins on the respiratory activity and body organs in shrimp and fish. Knowledge of the theory and practice of the course will help students in learning the following subjects, applications for study on physiology, toxicology and health management of aquatic animals and aquaculture very well.	
45	AQ212	Aquatic animal nutrition	3	The subject "Aquatic Animal Nutrition" provides learners basic knowledge about nutrition and feed in aquaculture, the metabolism and supplied sources of nutrients, nutritional compositions, the anti-nutrition factors and imitative methods of ingredients, effects of processing methods on the nutritional compositions of feed, methods to conduct nutritional experiments, methods to formulate feed for aquatic animals. Moreover, in practical contents, learners will be familiar with the methods to analyze nutritional parameters in the laboratory and make simple feed; learners are able to formulate a feed for a fish at a life stage. Subjective knowledge of the course will help students in scientific research and applications in aquaculture.	CAF
46	AQ214	Applied statistics and experimental design	3	The course aims to provide to students theoretical, practical knowledge and skills in scientific research concept, statistics applied, experimental design and statistical analysis of data related to aquaculture research. Theory: the student must be able to (i) recognize probability and statistical terms and principles of scientific research; (ii) to arrange a research work (iii) and to recognize the methods of experimental design and statistical analysis. Practice: the student must be able to (i) apply/compute different research/and statistical tools; (ii) to apply design experiments; and (iii) to analyze data using common statistical software ; and (v) to write /and present research results in thesis.	CAF
47	AQ216	Scientific research methodology	2	The course covers an overview of research approach, tools for identifying and solving research problems, statistical considerations,	CAF

				methods and steps in identification of researchable problems and research planning, guidelines for writing a research proposal and reports in different formats.	
48	AQ217	Practice on fundamental disciplines	4	The course provides students knowledge in the methods for selection of sampling sites, collecting the samples, including water, phytoplankton, zooplankton, zoobenthos; and aquatic resources, such as fish, crustacean, and mollusk in the freshwater and marine ecosystems. The course will improve the students' skills on sample analysis in the laboratory; ability to assess the physical, chemical, biological, geological and ecological processes that affect biodiversity and structures of aquatic communities. Besides, the course also raises students' skills on data collection, analysis, and presentation.	CAF
49	AQ220	Biology of fishes	2	The course introduces to students the diversity of living fishes from hagfishes, lampreys to sharks, rays, and bony fishes with special biological characteristics; common concepts, principles, and fish behavior (from taxonomy, feeding, age and growth to reproduction and larval development). The course also provides some simple methods used in fish biological study and research that can be also applied in aquaculture practices.	CAF
50	AQ301	Aquaculture production	4	Aquaculture production is a professional course to supply the knowledge on the status of world aquaculture and to evaluate aquaculture potential. The principal techniques of aquaculture include site and cultured species selection, pond management, fertilizer, water quality management, feeds and feeding, aquatic weed management, effluent management, fish transportation, harvesting, aquaculture production systems (ponds, cages, enclosure,...) will be in this course.	CAF
51	AQ222	Hatchery operation and management	3	This 3-credit course is the required course of the study field in aquaculture. The course focuses on theory and training students on seed production and hatchery management of important aquaculture species such as pangasius catfish, clarias catfish, common carp, silver barb, snakeskin gourami.... With knowledge and skill gained from the course, students are ready to work in the company or operate their own hatchery and farm after graduation. Group working are main the task during the course.	CAF
52	AQ303	Shellfish aquaculture	3	This course is one of the specialized program courses in the aquaculture academic program. The course introduces students (i) the general	CAF

				information about the current status, roles and issues for sustainable development of shellfish aquaculture, (ii) biological characteristics of shellfish species, and (iii) farming technologies of important shellfish species. In addition, the course includes field trips to visit different farming systems in the regions. The course approaches different methods to enhance the learning capability of students.	
53	AQ223	Shellfish hatchery operation and management	3	This course is one of the specialized courses in the aquaculture academic program. The course introduces students to the general information about the current status, roles and issues for sustainable development of shellfish aquaculture; introduce reproductive biological characteristics of shellfish species, and introduce seed production technologies of important shellfish species. In addition, the course includes field trips to visit different hatcheries in the regions. The course approaches different methods to enhance the learning capability of students.	CAF
54	AQ305	Introduction to fish health and clinical fish disease diagnosis	3	The course provides concepts of fish health and interactions between the host, the environment, and pathogens and disease development, knowledge on infectious and non-infectious diseases that affect fish, the principles of disease diagnosis, management, treatments, water quality and disease in cultured fish.	CAF
55	AQ306C	Fish and shellfish diseases	3	The course will provide the principles of aquatic animal pathology and understand the interactions among the host, environment, and pathogens. The lectures will consist of descriptions of diseases, etiological agents, geographical range, species susceptibility, clinical signs, clinical pathology, epidemiology, control and management of infectious diseases and parasites of fish/shrimp diseases. Otherwise, students will be offered laboratory activities to practice the diagnostic techniques for identification of microbial fish pathogens and parasites including identification, life cycles and treatment methods of fish/shrimp diseases.	CAF
56	AQ307	Fish genetic enhancement and resources management	3	The course introduces theory of genetics and breeding in fishes and other aquatic animals, methods in fish selective breeding population genetics, conservation genetics, and genetic management of natural population of fish; traditional animal breeding, genetic engineering and other genomic manipulations for genetic enhancement of aquatic organisms; inheritance of characters	CAF

				responsible for efficient fish production.	
57	AQ308	Fisheries biology and management	3	This course provides the knowledge on: i) Main kinds of fisheries resources such as molluscs, crustaceans, fishes; ii) Methods for estimation of fish abundance such as swept area, mark-recapture and depletion method; iii) Fish population biology such as growth, mortalities and recruitment; and iv) objectives of fisheries management and regulations. In practice, students also learn how to determine the fish cohorts, growth parameters (L_{∞} , K and t_0), mortalities rates (total, natural and fishing mortalities), and exploitation rate (E).	CAF
58	AQ224	Facilities for aquaculture	2	The course clarifies and emphasizes the importance of planning for an aquaculture farm, understanding of soil, measurement and construction of ponds, installation of work items, and arranging a proper water supply and drainage system so that farm can be operated effectively. Besides, the main machineries and equipments are also mentioned to train students with basic knowledge in planning and management of aquaculture activities in an effective manner.	CAF
59	AQ310	Live food culture	2	The lectures emphasize on the role of live feed in aquaculture which included micro-algae, rotifer, Artemia, Moina, Daphnia. By means of their morphological characteristics, distribution, structured and reproductive straits of the focused live feeds, and as a need of methodology for stock preservation, scaling up and culture in different models in simple to sophisticated systems, and appropriate level of out-puts (i.e. low to high productivity).	CAF
60	AQ312C	Aquaculture economics	3	The course provides knowledge on principal economic factors affecting the production of aquaculture commodities, management of the firm, and financial structure of successful aquaculture operations. Theoretical concepts presented include supply-demand derivations and measurement, fiscal management, marginal analysis, market structure, price determination, economic interface with biological production, farm management, capital investment and aquaculture policy analysis.	CAF
61	AQ313	Fisheries law	2	The course will be divided into 3 main subjects: (1) introduce the Vietnam legal	CAF

				system. Students will use this general knowledge to study the specific regulations related to aquaculture and fishery industry; (2) fisheries law; (3) selective environmental law, and law, commercial law, and contract law's regulations.	
62	AQ225	Practice on aquaculture	5	This 5-credit course is the required course of the study field in aquaculture. The course focuses on training students on practice of seed production and hatchery management of important aquaculture species such as shrimp, prawn, crabs, pangasius catfish, clarias catfish, common carp, silver barb, Tilapia... In addition to practice, students will pay visits to shrimp and fish hatcheries and farms in the region. With knowledge and skill gained from the course, students are ready to work in the company or operate their own hatchery and farm after graduation. Group working is the main task during the course.	CAF
63	AQ315	Seminar/ Special study	1	Seminar was focused on many subjects such as aquatic animal nutrition; aquatic animal physiology; aquatic animal diseases; aquaculture environment; aquaculture reproduction; aquaculture technology; aquaculture economics; live food for aquaculture. Study tour is aimed to share activities and knowledge with students and professors in host universities in different countries from Thailand, Malaysia, Indonesia, Vietnam, Myanmar and the Philippines.	CAF
64	AQ226	Internship	5	This 5-credit course is the required course of the study field in aquaculture. The course focuses on training students on operating activities in a hatchery or a grow-out farm of important aquaculture species. With knowledge and skill gained from the course, students can work after graduation. Group working are main the task during the course.	CAF
65	AQ311	Planning for aquaculture development	2	The lecture provides 4 Chapters which consist of (1) Global and national aquaculture development, basic concepts, prospects, benefits and ecological impacts in aquaculture; (2) Natural resources, environment, biodiversity and management in aquaculture and fishery; (3) Design and implementation in planning and management; Principles of planning and management; and (4) Tools and methods of aquaculture planning.	CAF
66	AQ227	Food quality management and safety	2	This course will provide general information on risk assessment and management of chemical contaminants, knowledge on	

				forbidden and legal veterinary drugs used in aquaculture, strategy to control veterinary drug residue and elimination rate of antimicrobial in fish. The course also provides general knowledge on different contaminants e.g. pesticide, PAHs, heavy metals. Also, analytical method of antimicrobial residue will also be introduced such as screening method, confirmation method and method validation. Application on international aquaculture standards in relation to food safety aspect in aquaculture will also be introduced including GlobalGAP, BAP/ACC and PAD/ASC	
67	AQ228	Biotechnology in aquaculture	2	The subject provides students with basic concepts of biotechnology and application of biotechnology in aquaculture, including: disease diagnosis, vaccination, production of specific pathogen free stock and probiotics.	
68	AQ229	Aquatic biomonitoring	2	The course will provide students knowledge on (i) status of bio-monitoring application in the world as well as in Vietnam; (ii) approaches used for bio-indicator identification; (iii) methods used to evaluate biodiversity and bio-indicators; (iv) aquatic organisms used as bio-indicators for bio-monitoring; (v) application of bio-monitoring in assessing a water body or an ecosystem.	
69	AQ502	Graduation thesis	14	Proposal preparation, research implementation, data collection and analysis and report writing and presenting. Graduation thesis will focus on each fields: - Aquatic animal nutrition - Aquatic animal physiology - Aquatic animal diseases - Aquaculture environment - Aquaculture reproduction - Aquaculture technology - Aquaculture economics - Seaweed, mollusks and others - Live food production	CAF

Course Syllabi attached in Appendices.

5. Teaching and Learning Methods

The selection of teaching and learning methods is based on their meeting the learning outcomes of the course (CLOs), the objectives (POs) and outcomes of the study programme (PLOs) to develop students' ability of knowledge discovery and construction. Depending on the characteristics of each course, lecturers use different teaching modes and methods. Teaching modes include teaching directly on or off campus (in experimental areas, production and trading establishments, farms, ...) or teaching online. Teaching and learning methods: Lecturers often use either one or more methods among the

following: observation, field trip, project based, case study, problem solving, presentation, research, group discussion, lecturing, elicit, demonstration, game, self-study,...

6. Student assessment method

- The assessment methods are chosen in align with the course content and the T&L method; and ensures to the achievement levels of PLOs. Two commonly used assessment methods are: consummative and formative, including multiple choice, essay, short test, short answer, discussion, group work report, presentation, drawing, diagram, writing, portfolio, practice test, individual assignment, group assignment, Q&A, reports, graduation theses.

- The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D grading and score on a scale of 4 as stated by the academic provisions of the University.

**ON BEHALF OF RECTOR
DEAN OF COLLEGE**

Can Tho, date ... month ... year 2020
HEAD OF DEPARTMENT

APPENDICES
COURSE SYLLABUS

