

**COURSE OUTLINE DETAILS**

**1. Course: Facilities for Aquaculture (Công trình và thiết bị thủy sản)**

- **Code number:** AQ224

- **Credits:** 2

- **Hours:** 25 theoretical hours, 10 practical hours, 50 self-study hours

**2. Management Unit:**

- **Department:** Coastal Aquaculture

- **Faculty:** College of Aquaculture and Fisheries

**3. Requisites:**

- **Prerequisites:** No

- **Corequisites:** No

**4. Course objectives:**

<b>Objectives</b>	<b>Descriptions</b>	<b>Program Outcomes</b>
<b>4.1</b>	To outline a design of an aquatic farm to meet the requirements of aquatic culture species; apply technical knowledge to operate and manage equipment and facilities in aquaculture production facilities.	2.1.3.b
<b>4.2</b>	To train students to manage and operate hatcheries and commercial farms of aquatic products.	2.2.1.b
<b>4.3</b>	To train students to develop their soft-skill, besides to build up the capacity of seeking information, to have an analytical mind and ability to synthesize information, be confident and creative.	2.2.2
<b>4.4</b>	To be able to apply the knowledge to the practical production system; students are able to self- learning and be responsible to the community.	2.3

**5. Course learning outcomes:**

<b>COs</b>	<b>Descriptions</b>	<b>Objectives</b>	<b>POs</b>
	<b>Knowledge</b>		
CO1	To reproduce the basic knowledge of aquaculture farm planning, in which the existing standards for aquaculture being applied; fresh and brackish water farms	4.1	2.1.3.b

COs	Descriptions	Objectives	POs
	<b>Knowledge</b>		
	models are guided to help students better understand the planning work for aquaculture; to outline a design aquaculture ponds and supply/drainage systems for a hatchery or grow-out farm.		
CO2	To select the operating principles and basic machinery and equipment commonly used in aquaculture: pumps, aerators, feed processing equipments ... to apply in actual production or management.	4.1	2.1.3b
	<b>Skills</b>		
CO3	To outline a planning of a fishery farm, a number of tools for pond measurement, technical drawings on the cross-section of ponds, monks, supplying/drainage water systems, breeding tanks, breeders...; to identify and use common equipments for aquaculture activities in order to meet professional and management requirements; to apply the knowledge learned in the evaluation, selection or proposing suitable sites for targeted species farming	4.2	2.2.1.b
CO4	To indicate team-works are required; beside students have developed ability to search and share information, to have an analytical and summary mind.	4.3	2.2.2
	<b>Attitudes/Autonomy/Responsibilities</b>		
CO5	To seek information from different resources and to collate with real production scale; constantly learning to improve skills; to work independently and team work; having learning attitude and progressive spirit, having enough knowledge and skills to communicate with community and society	4.4	2.3

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

## 6. Brief description of subject content:

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, arranging a proper water supply and drainage system so that the 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.

## 7. Subject content structure:

### 7.1. Theory:

	Content	Hours	COs
<b>Chapter 1.</b>	Basic knowledge of aquaculture farm planning	<b>10</b>	CO1, CO2, CO3, CO4
1.1.	Overview of aquaculture farm planning	2	
1.2.	Some standards related to aquaculture farm	1	
1.3.	planning	1	
1.4.	Standards related to infrastructure and construction items	1	
1.5.	Regulations on construction and trading for hatchery production in aquaculture	2	
1.6.	Standard construction works according to	1	
1.7.	standard models for	1	
1.8.	Good aquaculture in Vietnam	1	
	Soil structure	1	
	Topographic maps		
<b>Chapter 2.</b>	<b>Facilities for hatcheries</b>	<b>4</b>	CO1, CO2, CO3, CO4
2.1.	Construction and facilities for aquatic hatcheries	2	
2.2.	Design and operation of aquatic hatcheries	2	
<b>Chapter 3.</b>	<b>Commercial aquaculture design</b>	<b>6</b>	CO1, CO2, CO3, CO4
3.1.	Facilities in commercial aquaculture farms	4	
3.2.	Design and operation of commercial aquaculture farms	2	
<b>Chapter 4.</b>	<b>Equipments in aquaculture</b>	<b>5</b>	CO1, CO2, CO3, CO4
4.1.	Overview of machineries and equipments commonly used in aquatic hatcheries	1	4.1.1; 4.1.2; 4.1.3;
4.3.	Aerator	1	
4.4.	Pump		

4.5.	Automatic feeder		
4.7.	Mechanical water treatment system	2	
4.8.	Biological water treatment system	1	

## 7.2. Practice:

	Contents	Hours	COs
<b>Practice 1.</b>	<b>A topic on design of a hatchery/nursery or grow-out farm for aquaculture</b>		CO1, CO2, CO3, CO4, CO5
1.1.	To overview the location where to make a plan for an aquaculture farm.	2	
1.2.	To conduct a farm design and drawing a pond (including cross-section and longitudinal section); type of tanks used according to the production target.	4	
1.3	To apply appropriate technical procedures in order to evaluate technically and cost-effectively of the farm designed.	2	
<b>Practice 2.</b>	<b>To set-up air-water lift systems and pump connection</b>		CO1, CO2, CO3, CO4
2.1	To measure flow-rate and the head of water out-let of different air-water lift systems	1	
2.2	To measure flow-rate and the head of water out-let of different pump connection	1	

## 8. Teaching method:

- Lectures occupy 2/3 duration of the credits of the subject in class room and visual illustration method.
- The remaining 1/3 duration of the credits is worked out by students (e.g. literature review, team-works and end up by a group/individual seminar.

## 9. Duties of student:

Students have been obligated to do the following tasks:

- Lecture attendance: 80%
- Practical attendance: 100%
- Self-study, team works, excursion to appropriate farms, report writing.
- Final exam attendance

## 10. Assessment of student learning outcomes:

### 10.1. Assessment method

Students to be evaluated according to appropriate components such as:

No.	Point Components	Rule and Requirements	Weights	COs
1	Seminar	Report	20%	CO2, CO4
2	Excursion to shrimp/fish farms or to conduct Practice 2	- Attendance: 100%	10%	CO5
3	Final examination	- Writing - Attendance: 80% lecture hours and 100% practical hours - Obligation	70%	CO1, CO2, CO3, CO4

### 10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of Cantho University.

### 11. Materials:

Materials information	Code number
[1] Nguyen Van Hoa, Nguyen Thanh Long and Nguyen Thanh Toan. 2017. Textbook: Facilities for Aquaculture. Cantho University Publishing House. Pp.144 (in Vietnamese).	639.20028 H401 TS005460
[2] Pillay, T. V. R. and Kutty, M. N. (2005). Aquaculture principles and practices (2 <sup>nd</sup> Edi.), Hong Kong, Blackwell publishing, Pp 640..	TS001591
[3] Odd-Ivar Lekang. 2013. Aquaculture Engineering (2 <sup>nd</sup> Edi.). Wiley-Blackwell. Pp.354.	TS001594

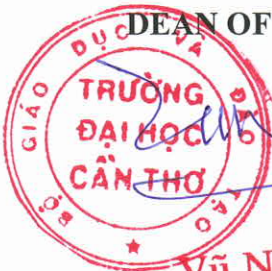
### 12. Self-study guide:

Week	Contents	Theory (hrs)	Practice (hrs)	Student's tasks
1	<b>Chapter 1:</b> Basic knowledge of aquaculture farm planning 1.1. Overview of aquaculture farm planning	20	0	-Reading materials: +Reference [1]:, Chapter 1, content 1.1; 1.2 (page 1); 1.3 (page 3); 1.4 (page 4); 1.5 (page 6); 1.6 (page 9) + Reference [2]: Chapter 3, Chapter 6

	<p>1.2. Some standards related to aquaculture farm planning</p> <p>1.3. Standards related to infrastructure and construction items</p> <p>1.4. Regulations on construction and trading for hatchery production in aquaculture</p> <p>1.5. Standard construction works according to standard models for</p> <p>1.6. Good aquaculture in Vietnam</p> <p>1.7. Soil structure</p> <p>1.8. Topographic maps</p>			+ Reference [3]: Chapter 26 (page 367), Chapter 27 (page 394)
2	<p><b>Chapter 2: Facilities for hatcheries</b></p> <p>2.1. Construction and facilities for hatcheries</p> <p>2.2. Design and operation of aquatic hatcheries</p>	2	0	<p>-Reading materials:</p> <p>+Reference [1]: Chapter 2 (page 43), contents 2.1 (page 43), 2.2 (page 55),</p> <p>- Reference [2]: Chapter 3, Chapter 6</p> <p>- Reference [3]: Chapter 26 (page 367)</p>
3	<p><b>Chapter 3: Commercial aquaculture facilities</b></p>	3	0	<p>-Reading materials:</p> <p>+Reference [1]: Chapter 3, contents 3.1 (page 66), 3.2 (page 102)</p>

	<p>3.1. Facilities in commercial aquaculture farms</p> <p>3.2. Design and operation of commercial aquaculture farms</p>			<p>- Reference [3]: Chapter 26 (page 367), Chapter 27 (page 394)</p>
4	<p><b>Chapter 4:</b></p> <p><b>Equipments in aquaculture</b></p> <p>4.1. Overview of machineries and equipments commonly used in aquatic hatcheries</p> <p>4.3. Aerator</p> <p>4.4. Pump</p> <p>4.5. Automatic feeder</p> <p>4.7. Mechanical water treatment system</p> <p>4.8. Biological water treatment system</p>	14	0	<p>-Reading materials:</p> <p>+ Reference [1]: Chapter 4 (page 112), contents 4.1 (page 112), 4.3 (page 118), 4.4 (page 123), 4.5 (page 128), 4.7 (page 132), 4.8 (page 138)</p> <p>- Reference [3] Chapter 2 (page 7), Chapter 7 (page 66), Chapter 12 (page 155), Chapter 21 (page 286).</p>

ON BEHALF OF RECTOR  
DEAN OF COLLEGE

  
*Vũ Ngọc Út*  
Vũ Ngọc Út

Can Tho, 30/.../...8.../2022  
HEAD OF DEPARTMENT

  
Lê Quốc Việt