

**1. INFORMATION OF COURSE AND LECTURER**

- 1.1. Course name and code: Applied immunology in aquaculture – AQ617
- 1.2. Course specification: 2 Cred. (Theory: 2; Assignment: 0; Practice: ), 30 hours (T: 30; A: 0; P: 0)
- 1.3. Prerequisites courses:
- 1.4. Responsible Department: Department of Aquatic Animal Pathology, College of Aquaculture and Fisheries, Can Tho University
- 1.5. Information of lecturer:
  - Name: Bui Thi Bich Hang
  - Email: btbhang@ctu.edu.vn
  - Co-teaching lecturer:
    - Name : LHPhuoc
    - Email:
    - Name : NNPhuoc
    - Email:

**2. COURSE DESCRIPTION**

The course aims to give students the opportunity to develop a knowledge in immunology, immune system of aquatic animal and the application of immunological techniques in aquaculture. Moreover, the course also explain the mechanism of immunostimulant action and vaccination to help the student apply effectively immunostimulant and vaccination in aquaculture.

**3. COURSE EXPECTED LEARNING OUTCOMES**

On successful completion of this course, students can understand and discussion all topic of application immunology in aquaculture as well as in disease diagnosis for aquatic animal. The student can also application of immunological techniques in experimental research or in commercial aquaculture.

**4. COURSE CONTENTS**

<b>Chapters</b>	<b>Hours (T/A/P)</b>
<p><b>Chapter 1: GENERAL OF IMMUNOLOGY</b></p> <p><i>This chapter will provide knowledge of basic immunology.</i></p> <p>1.1. Definition, basic concepts of immunology</p> <p>1.2. Non-specific immunology system</p> <p>1.3. Specific immunology system</p> <p><i>In order to understand well this chapter, students should read references of [1].</i></p>	3/0/0
<p><b>Chapter 2: IMMUNE SYSTEM OF AQUATIC ANIMAL</b></p> <p><i>This chapter will provide knowledge of immune system of aquatic animal</i></p>	3/0/0

<p>2.1. Immune system of Crustacean</p> <p>2.2. Immune system of fish</p> <p><i>In order to understand well this chapter, students should read references of [2].</i></p>	
<p><b>Chapter 3: APPLICATION OF IMMUNOSTIMULANT IN AQUACULTURE</b></p> <p><i>This chapter will provide knowledge of immunostimulant in aquaculture</i></p> <p>3.1. General of immunostimulant</p> <p>3.2. Principle mechanism of immunostimulant action in aquaculture.</p> <p>3.3. The results of using immunostimulants in aquaculture.</p> <p><i>In order to understand well this chapter, students should read references of [3], [4].</i></p>	5/0/5
<p><b>Chapter 4: APPLICATION OF VACCINE IN AQUACULTURE</b></p> <p><i>This chapter will provide knowledge of application vaccine in aquaculture</i></p> <p>Chương 4: Sử dụng vaccine trong nuôi trồng thủy sản</p> <p>4.1. General of vaccination</p> <p>4.2. Technology of vaccine production</p> <p>4.3. Method of vaccine administration in aquaculture</p> <p>4.4. Standard for vaccine evaluation.</p> <p>4.4. Advantage and disadvantage of vaccination.</p> <p><i>In order to understand well this chapter, students should read references of [3], [5].</i></p>	5/0/5
<p><b>Chapter 5: APPLICATION OF IMMUNOLOGICAL TECHNIQUES IN DISEASE DIAGNOSIS OF AQUATIC ANIMAL</b></p> <p><i>This chapter will provide knowledge of application of immunological techniques in disease diagnosis of aquatic animal</i></p> <p>5.1. Definition and basic concepts</p> <p>5.2. Antigen and antibody</p> <p>5.3. Principle mechanism of application immunological techniques in disease diagnosis of aquatic animal.</p> <p>5.4. Immunological techniques in disease diagnosis of aquatic</p>	5/0/5

animal: immune agglutination, Western blot, Immunohistochemistry, ELISA, ...	
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*In order to understand well this chapter, students should read references of [2], [3].*

## **5. TEACHING METHODS AND ASSESSMENT**

### **5.1. Teaching methods:**

The course is 30 hrs of theory. During the course, the students will do assignment and group presentation.

### **5.2. Assessment methods:**

Assignment and group presentation: 30%

Final exam: 70%

## **6. READING REFERENCES**

- [1] Vu Trieu An and Jean Claude Homberg, 2001. Immunology. Medicine publishing.
- [2] Dang Thi Hoang Oanh, Doan Nhat Phuong, 2007. Textbook of Immunology of Aquatic animal. Cantho University.
- [3] Charles A. Janeway, Jr., Travers P., Walport M., Shlomchik, M.J., 2001. Immunobiology 5. Garland Publishing.
- [4] Shyam Narayan Labh and Shubha Ratna Shakya, 2014. Application of immunostimulants as an alternative to vaccines for health management in aquaculture. International Journal of Fisheries and Aquatic Studies 2(1): 153-156.
- [5] Roar Gudding, Atle Lillehaug, Øystein Evensen, 2014. Fish vaccination. Wiley Blackwell Publishing.

*Date:*

**Lecturer**