

## **COURSE SYLLABUS**

### **1. INFORMATION OF COURSE AND LECTURER**

- 1.1. Course name and code: FOOD SAFETY AND HYGIENE OF AQUACULTURE PRODUCTS – AQ...
- 1.2. Course specification: 2 Cred. (Theory: 1.5; Assignment: 0; Practice: 0.5), 30 hours (T: 25; A: 0; P: 10)
- 1.3. Prerequisites courses: none
- 1.4. Responsible Department: Aquatic Nutrition and Products Processing, College of Aquaculture and Fisheries, Can Tho University
- 1.5. Information of lecturer:  
Name: Dr. Tran Minh Phu  
Email: tmphu@ctu.edu.vn

### **2. COURSE DESCRIPTION**

Aquaculture food safety control and management is important to achieve a safe seafood product for consumers. 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.

### **3. COURSE EXPECTED LEARNING OUTCOMES**

*Theoretically:*

- Knowledge on risk assessment and management of chemical contaminants in seafood products.
- Knowledge on forbidden and legal veterinary drugs used in aquaculture, understanding on elimination of antimicrobials in fish.
- General knowledge on different contaminants e.g. pesticide, PAHs, heavy metals related to food safety.
- General knowledge on analytical methods of antimicrobial residue.
- General knowledge on international aquaculture standards related to food safety.

*Practically:*

- Analysis of chloramphenicol residue in fish by ELISA.
- Analysis of enrofloxacin residue in fish by HPLC-fluorescence detector.

### **4. COURSE CONTENTS**

<b>Chapters</b>	<b>Hours (T/A/P)</b>
<b>Chapter 1: INTRODUCTION</b>	3/0/0

<p><i>This chapter will provide general information on risk assessment and management of chemical contaminants in seafood products</i></p> <p>1.1. Basis concepts of risk analysis</p> <p>1.2. Overview of different categories of chemical contaminants in food</p> <p><i>In order to understand well this chapter, students should read reference of [1].</i></p>	
<p><b>Chapter 2: RESIDUES OF VETERINARY DRUGS.</b></p> <p><i>This chapter will provide knowledge on forbidden and legal veterinary drugs from different countries e.g. European Union, USA, Vietnam. The chapter also provides strategy to control veterinary drug residue and elimination rate of antimicrobial in fish</i></p> <p>2.1. Forbidden substances (hormones, toxic antimicrobials, malachite green).</p> <p>2.2. Legal veterinary drugs</p> <p>2.3. Strategy to control veterinary drug residues: the example of European Union .....</p> <p>2.4. Elimination rate of antimicrobials in fish</p> <p><i>In order to understand well this chapter, students should read references of [1], [2] and [3].</i></p>	5/0/0
<p><b>Chapter 3: OTHER CONTAMINANTS</b></p> <p><i>This chapter will provide general knowledge on different contaminants e.g. pesticide, PAHs, heavy metals.</i></p> <p>3.1. Pesticides.</p> <p>3.2. Environmental contaminants</p> <p>3.3. Dioxins &amp; PCBs</p> <p>3.4. PAHs (Polycyclic aromatic hydrocarbons)</p> <p>3.5. Heavy metals</p> <p>3.6. Marine biotoxins</p> <p>3.7. Biogenic amines</p> <p><i>In order to understand well this chapter, students should read references of [1].</i></p>	3/0/0
<p><b>Chapter 4: ANALYTICAL METHODS TO DETECT CHEMICAL RESIDUES IN FOOD</b></p> <p><i>This chapter will provide general information on screening and confirmation methods for analysis of chemical residue in seafood products.</i></p> <p>4.1. General strategy of control: screening and confirmation.</p> <p>4.1.1. Screening method: ELISA.</p>	5/0/10

<p>4.1.2. Confirmation method: GC-MS and LC-MS.</p> <p>4.2. Analytical methods to detect antimicrobials</p> <p>4.3. Practice on:</p> <ul style="list-style-type: none"> <li>- Analysis of chloramphenicol residue in fish by ELISA.</li> <li>- Analysis of enrofloxacin residue in fish by HPLC-fluorescence detector.</li> </ul> <p><i>In order to understand well this chapter, students should read references of [4] and [5].</i></p>	
<p><b>Chapter 5: Validation of analytical methods</b></p> <p><i>This chapter will provide general information on validation of analytical method for detection of antimicrobial residue in seafood products.</i></p> <p>5.1 Validation of analytical method according to EU regulation</p> <p>5.2 Accreditation of laboratories (ISO 17025)</p> <p><i>In order to understand well this chapter, students should read reference of [6].</i></p>	3/0/0
<p><b>Chapter 6: International aquaculture standards related to food safety</b></p> <p><i>This chapter will provide general information on international aquaculture standards related to food safety.</i></p> <p>6.1. GlobalGAP</p> <p>6.2. BAP/ACC</p> <p>6.3. PAD/ASC</p> <p><i>In order to understand well this chapter, students should read references of [7].</i></p>	6/0/0

## 5. TEACHING METHODS AND ASSESSMENT

### 5.1. Teaching methods:

The course will be given as oral lectures (25 hours) in combination with laboratory practice (10 hours).

### 5.2. Assessment methods:

Practice report (20%) and final exam (multiple choice, 60% and case explanation, 20%).

## 6. READING REFERENCES

- [1] Leon Brimer, 2011. Chemical food safety. CAB International 2011
- [2] EC, European Commission. 2010. Commission Regulation (EU) N° 37/2010 of 22 December 2009 on pharmacologically active substances and their classification regarding maximum residue limits in foodstuffs of animal origin. O. J. E. C. L15, 1-72.
- [3] Articles related to chapter 2.

- [4] Handbook of seafood and seafood analysis-CRC-Press-2008.
- [5] Articles related to chapter 4.
- [6] EC, European Commission. 2002. Commission Decision N° 2002/657/EC. O. J. E. C. 221, 8-36.
- [7] International aquaculture standards such as GlobalGAP, BAP/ACC and PAD/ASC.

*Date: 30 May 2015*

**Lecturer**

Tran Minh Phu