

1. INFORMATION OF COURSE AND LECTURER

- 1.1. Course name and code: Application Biotechnology in Aquaculture
- 1.2. Course specification: 2 Cred. (Theory: 1.5; Assignment: 0; Practice: 0.5), 40 hours (T: 20; A: 0; P: 20)
- 1.3. Prerequisites courses: No
- 1.4. Responsible Department:
- 1.5. Information of lecturer:
 - Name: Nguyen Tan Sy
 - Email: syngtan@gmail.com
 - Co-teaching lecturer:
 - Name : Le Minh Hoang
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2. COURSE DESCRIPTION

To provide students deep knowledge on application of genetic engineering, microbial technology, tissue and cell culture technology and environmental technology in aquaculture.

3. COURSE EXPECTED LEARNING OUTCOMES

To help students to apply knowledge about biotechnology in seed production and grow out some aquatic species, water and waste treatment in aquaculture.

Theoretically:

- Understanding transgenic methods in animals and plants and applications in aquaculture.
- Understanding the distribution of microorganisms in the environment, the product of fermentation of microorganisms and application in aquaculture.
- Mastering about cell technology in plants, animals and applications in the field of aquaculture.
- Application of biotechnology in water and waste treatment from aquaculture.

Practically:

- Culturing methods of microorganisms.
- The methods for producing some of probiotics
- Culturing methods of plant cell.
- The methods for water and waste treatment from aquaculture.

4. COURSE CONTENTS

Chapters	Hours (T/A/P)
Chapter 1: APPLICATION OF GENETIC TECHNOLOGY IN AQUACULTURE <i>This chapter will provide knowledge overview of gene technology, transgenic methods in animals and plants and applications in aquaculture.</i>	5/0/0

<p>1.1. Overview of gene technology</p> <p>1.2. Transgenic methods</p> <p>1.3. Transgenic technology in animals</p> <p>1.4. Transgenic technology in plants</p> <p>1.5. The application of genetic technology in aquaculture</p> <p><i>In order to understand well this chapter, students should read references of [1], [2], [5].</i></p>	
<p>Chapter 2: APPLICATION OF MICROBIAL TECHNOLOGY IN AQUACULTURE</p> <p><i>This chapter will provide knowledge overview of microbial technology, the distribution of microorganisms in the environment, the product of fermentation of microorganisms and application in aquaculture. This chapter have 7 hours of practice for culturing methods of microorganisms and the methods for producing some of probiotics.</i></p> <p>2.1. Overview of microbial technology</p> <p>2.2. The distribution of microbial in the environment</p> <p>2.3. The fermentation products of microbiology</p> <p>2.4. The application of microbial technology in aquaculture</p> <p>2.5. Practice</p> <p><i>In order to understand well this chapter, students should read references of [3], [4].</i></p>	5/0/7
<p>Chapter 3: APPLICATION OF TISSUE AND CELL CULTURE TECHNOLOGY IN AQUACULTURE</p> <p><i>This chapter will provide knowledge about cell technology in plants, animals and applications in the field of aquaculture. This chapter have 5 hours of practice for culturing methods of plant cell.</i></p> <p>3.1. Overview of cell technology</p> <p>3.2. Technology of tissues and cells culture in plants</p> <p>3.3. Technology of tissues and cells culture in animals</p> <p>3.4. The application of tissue and cell culture technology in aquaculture</p> <p>3.5 Practice</p> <p><i>In order to understand well this chapter, students should read references of [6].</i></p>	5/0/5
<p>Chapter 4: APPLICATION OF ENVIRONMENTAL TECHNOLOGY IN AQUACULTURE</p> <p><i>This chapter will provide knowledge overview of environmental technology and application of biotechnology in water and waste treatment from aquaculture. This chapter have 8 hours of practice</i></p>	5/0/8

about the methods for water and waste treatment from aquaculture.

4.1. Overview of environmental technology.

4.2. Application of environmental technology in water treatments for aquaculture.

4.3. Application of environmental technology in waste water treatments in aquaculture.

4.4. Application of environmental technology in waste treatments in aquaculture.

4.5. Practice

In order to understand well this chapter, students should read references of [7].

5. TEACHING METHODS AND ASSESSMENT

5.1. Teaching methods:

This credits is taught combines both theory (20 hours), practice (20 hours). During the learning process, students will do essays and presentations with members in groups.

5.2. Assessment methods:

Thematic presentations: 20%, Practice: 30%, Final test: 50%

6. READING REFERENCES

- [1] Andy Beaumont, Pierre Boudry, Kathrin Hoare (2010), Biotechnology and Genetic in Fisheries and Aquaculture. Wiley – Blackwell (2nd Edition).
- [2] Thomas D. Kocher, Chittaranjan Kole (2008), Genome Mapping and Genomics in Fishes and Aquatic Animals. Springer.
- [3] Do Nang Vinh, Ngo Xuan Binh (2008), General Biotechnology. Agriculture publisher.
- [4] Nguyen Hoang Loc (2007), General Biotechnology. Hue University publisher.
- [5] Tran Quoc Dung, Nguyen Hoang Loc, Tran Thi Le (2006), Transgenic technology (animals, plants). Hue University publisher.
- [6] Nguyen Hoang Loc (2006), The cell technology. Hue University publisher.
- [7] Le Xuan Phuong (2005), Microbiology - biological processes in environmental technology. Da Nang University of Polytechnic publisher.

Date: 18/06/2015

Lecturer

Nguyen Tan Sy

