MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

COURSE SYLLABUS

1. INFORMATION OF COURSE AND LECTURER

1.1. Course name and code: Applied statistics in aquaculture
1.2. Course specification: 2 Cred. (Theory: 1; Assigment: 0; Practice: 1), 40 hours (T: 20; A: 0; P: 20)
1.3. Prerequistes courses: N/A
1.4. Responsible Department:
1.5. Information of lecturer:

Name: Dr Le Anh Tuan
Email: leanhtuandhts@gmail.com

Co-teaching lecturer:

Name :
Email:

2. COURSE DESCRIPTION

The course covers the following main topics*: Basics of statistics in aquaculture, Identifying researchable problems and developing hypotheses, Aquaculture experimental designs, Data collection and storage, Data analysis.* The course is expected to help the leaners to evaluate research problems effectively and propose practical solutions through building up skills in identifying researchable problems, developing hypotheses based on identified problem, design a suitable experimental design, collect and store data, use appropriate analytical methods to falsify or validate the hypotheses, and writing up conclusions based on the research results

3. COURSE EXPECTED LEARNING OUTCOMES

On succesful completion of the course

Theoretically:

The student should have:

- A general understanding of the importance of statistics in aquaculture.
- An overview of emerging problems in aquaculture field in general and researchable problems in particular.
- General knowledge of developing hypotheses, aquaculture experimental designs, data collection and storage.
- A general understanding of using appropriate analytical methods to falsify or validate the hypotheses, and writing up conclusions based on the research results.

Practically:

The student should know how to:

- Identify researchable problems in aquaculture field.
- Develop hypotheses based on identified problem.
- Design a suitable aquaculture experimental design.
- Collect and store data.
- Use appropriate analytical methods to falsify or validate the hypotheses, and writing up conclusions based on the research results.

4. COURSE CONTENTS

Chapters	Hours (T/A/P)
Chapter 1: Basics of statistics in aquaculture *This chapter will provide basic knowledge of applied statistics in aquaculture.* 1.1. Introduction 1.2. Experimental unit in aquaculture 1.3. Data accuracy and exploratory analysis 1.4. Central locations and variability *In order to understand well this chapter, students should read references of [5], [9], [10].*	2/0/0

Chapter 2: Identifying researchable problems and developing hypotheses *This chapter will provide knowledge of emerging problems in aquaculture field in general and researchable problems in particular and general knowledge of developing hypotheses and research proposals.* 2.1. Science and scientific research types in aquaculture 2.2. Identifying researchable problems 2.3. Developing hypotheses 2.4. Planning and developing research proposals Practice: Team work to develop a problem tree *In order to understand well this chapter, students should read references of [10], [11].*	4/0/3
Chapter 3: Aquaculture experimental designs *This chapter will provide knowledge of commonly-used aquaculture experimental designs.* 3.1. Background 3.2. Completely randomized design 3.3. Randomized complete block design 3.4. Latin square design 3.5. Factorial experiments Practice: G power - Power analysis for an experiment to compare two treatments - Power Analysis for an experiment with multiple treatments or a factorial design *In order to understand well this chapter, students should read references of [1], [2], [3], [7], [8], [9], [10] .*	6/0/5
Chapter 4: Data collection and storage *This chapter will provide knowledge of data collection methodologies, data tabulation and database management.* 4.1. Data collection 4.2. Data storage *In order to understand well this chapter, students should read references of [1], [2], [9], [10].*	2/0/0
Chapter 5: Data analysis *This chapter will provide knowledge of statistical data analysis and interpretation methodologies.* 5.1. Background 5.2. Hypothesis testing using ANOVA 5.3. Testing and exploring relationships 5.4. Other analyses Practice: - Hypothesis testing using ANOVA: CRD, RCBD, LSD, Factorial designs. - Testing and exploring relationships: regression and correlation - Other analyses: non-parametric tests *In order to understand well this chapter, students should read*	6/0/12

references of [4], [6], [8], [9], [10], [12].	

5. TEACHING METHODS AND ASSESSMENT

5.1. Teaching methods:

Face-to-face teaching; the course is a combination of theory (20 hours) and practice (20 hours); the students will be organized in groups for team-work assignments.

5.2. Assessment methods:

Team-work report: 10%
Practice: 40%
Final term exam: 50%

6. READING REFERENCES

[1] Angus Cameron, 2002. *Survey Toolbox for Aquatic Animal Diseases.* ACIAR, Australia.

[2] English S., Wilkinson C. and Baker V., 1994. *Survey manual for tropical marine resources.* Australian Institute of Marine Science.

[3] Franz-Faul, 2008. G power version 3.0.10. Kiel University, Germany.

[4] Helge Toutenburg, 2002. *Statistical analysis of designed experiments*. 2nd ed., Springer-Verlag New York, 517 pp.

[5] Jerrold H. Zar Jerrold H. Zar, 1999. *Biostatistical Analysis.* Prentice Hall.

[6] John O. Rawlings, Sastry G. Pantula, David A. Dickey, 1998. *Applied Regression Analysis*. Second Edition, Springer-Verlag New York, 678 pp.

[7] Kevin R. Murphy, Brett Myors, 2004. *Statistical Power Analysis: A Simple and General Model for Traditional and Modern Hypothesis Tests*. Second Edition, Lawrence Erlbaum, 172 pp.

[8] Klaus Hinkelmann and Oscar Kempthorne, 2005. *Design and Analysis of Experiments, Volume 2: Advanced Experimental Design*. John Wiley & Sons, Inc., Hoboken, New Jersey, 811 pp.

[9] Mead, Curnow & Hasted, 2003. *Statitistical methods in Agriculture and Experimental Biology.* Chapman & Hall.

[10] Ram C. Bhujel, 2008. *Statistics for aquaculture.* Wiley-Blackwell, 221p.

[11] http://www.dfid.gov.uk/FOI/tools/chapter_03.htm "DFID's Social Development toolkit".

[12] SPSS Inc., 2007. SPSS version 16.0.

Date: *June 4, 2015*
Lecturer *Le Anh Tuan*