MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

COURSE SYLLABUS

1. INFORMATION OF COURSE AND LECTURER

1.1. Course name and code: **Tropical Aquatic Ecosystems**
1.2. Course specification: 2 Cred. (T: 30; A: 0; P: 0)
1.3. Prerequistes courses: None
1.4. Responsible Department: Applied Hydrobiology
1.5. Information of lecturer:

Name: Vu Ngoc Ut (College of Aquaculture and Fisheries)
Email: vnut@ctu.edu.vn
Co-teaching lecturer:
Name : Nguyen Duy Quynh Tram (Hue University)
Email: nguyenduyquynhtram@huaf.edu.vn

2. COURSE DESCRIPTION

The course will provide knowledge on biotic and abiotic features of different tropical ecosystems including mangrove, coral reef, river and pond, and wetland ecosystems… Structure and function of the ecosystems will be also discussed in which ecological issues related to biodiversity, habitats and adaptation of aquatic fauna and flora to living conditions in different ecosystems are mentioned. Impacts of human activities and global climate change on the ecosystems and measures for protection and conservation of the ecosystems will be also discussed.

3. COURSE EXPECTED LEARNING OUTCOMES

When successfully completing the course, the students will be able to analyze, evaluate and apply issues related to tropical ecosystems:

- Master the knowledge on biotic and abiotic features of a tropical ecosystem
- Understand biological and phisycial processes in the ecosystems
- Analyze and evaluate the status of an aquatic ecosystem
- Apply knowledge of biodiversity, adaptation mechanisms of aquatic fauna and flora in the ecosystem to propose measures for protection and management of the ecosystems

4. COURSE CONTENTS

Chapters	Hours (T/A/P)
Chapter 1: INTRODUCTION TO AQUATIC ECOSYSTEM *This chapter will introduce information on aquatic ecosystems including concepts, biotic and abiotic factors, energy flow* 1.1. Concepts on aquatic ecosystems 1.2. Energy flow in an aquatic ecosystem 1.3. Biotic and abiotic factors 1.4. Aquatic organisms in an ecosystem 1.5. Comparison on biotic and abiotic factors between aquatic ecosystems and terrestrial ecosystems	5/0/0

In order to understand well this chapter, students should read references of [1], [2], [3], [4] and [5].	
Chapter 2: TROPICAL INLAND ECOSYSTEMS *This chapter will provide knowledge on biotic and abiotic features of inland ecosystem including rivers, lakes and ponds with hydrology, diversity and water quality of the ecosystems, specific case will be focused on Mekong River.* 2.1. Introduction on inland ecosystems (rivers, ponds, lakes) 2.2. General features and functions of different ecosystems 2.3. Biotic and abiotic components of the ecosystems 2.4. Ecological interactions (primary production, decomposition, nutrient cycling) 2.5. Natural and human impacts on the ecosystems 2.6. Monitoring of the ecosystems *In order to understand well this chapter, students should read references of [6], [7].*	5/0/0
Chapter 3: TROPICAL ESTUARINE ECOSYSTEM *This chapter will provide knowledge on biotic and abiotic features of tropical estuarine ecosystem, its function and human impacts* 3.1. General features 3.2. Bitoic and abiotic features 3.3. Ecological interactions 3.4. Impact of humans on the ecosystem *In order to understand well this chapter, students should read references of [8], [9], [10].*	5/0/0
Chapter 4: MANGROVE ECOSYSTEM *This chapter will provide knowledge on biotic and abiotic features of mangrove ecosystem, its function and human impacts* 4.1. General features 4.2. Bitoic and abiotic features 4.3. Ecological interactions 4.4. Impact of humans on the ecosystem *In order to understand well this chapter, students should read references of [11], [12],[13].*	5/0/0

Chapter 5: CORAL REEF ECOSYSTEM *This chapter will provide knowledge on biotic and abiotic features of coral reef ecosystem, its function and human impacts* 5.5. General features 5.6. Bitoic and abiotic features 5.7. Ecological interactions 5.8. Impact of humans on the ecosystem 5.9. Bleaching and the causes *In order to understand well this chapter, students should read references of [14], [15].*	5/0/0
Chapter 6: CLIMATE CHANGES AND AQUATIC ECOSYSTEM *This chapter will provide knowledge on problems of climate changes and its impacts on aquatic ecosystem; responses of ecosystems to climate changes and role of human* 6.1. Climate, environmental factors and aquatic ecosystems 6.2. Responses of ecosystems to climate changes 6.3. Adaptation limitation of aquatic ecosystem and role of human *In order to understand well this chapter, students should read references of [16], [17]*	

5. TEACHING METHODS AND ASSESSMENT

5.1 Teaching methods:

Lectures are given on class in combination with assignment which is given to groups of students with different given topics. Each group prepares for the presentation at the end of the theory.

5.2 Assessment methods:

- Midterm exam: 20%
- Seminar: 30%
- Final exam: 50%

6. READING REFERENCES

[1] Arvind Kumar (2003). Aquatic Ecosystems. A.P.H. Pub. Corp.

[2] Barnes, R.S.K., Hughes, R.N. (1982). An Introduction to Marine Ecology. Blackwell Science Ltd.

[3] Loeb, S. L., Spacie, A. (1994). Biological Monitoring of Aquatic Systems. Lewis Publishers, Inc.

[4] Nriagu, J.O., Lakshminarayana, J.S.S (1988). Aquatic toxicology and water quality management AEST V22. John Wiley & Sons Inc.

[5] Findlay, S., Sinsabaugh, R. (2002). Aquatic ecosystems: Interactivity of dissolved organic matter (A Vol, in the aquatic ecology series). Academic press.

[6] Campbell, I,C. (2009). The Mekong: Biophysical Environment of an International River Basin. Elsevier Inc. 432pp.

[7] Wetzel, R., (2001). Limnology: Lake and River ecosystems. Third edition. Academic press. 1006 pp.
[8] Day, J.W., Hall, C.A.S, Kemp, M.W. và Yanez-Arancibia, A. (1989). Estuarine ecology. A Wiley-interscience publication, John Wiley & Son.
[9] McLusky, D.S. (1971). Ecology of estuaries. Heinemann Educational Books Ltd. London.
[10] Little, C. (2000). The biology of soft shores and estuaries. Oxford university press, 252pp.
[11] Kathiresan, K., Qasim, S.Z. (2005). Biodiversity of mangrove ecosystems. Hindustan Publishing Corporation (India), 251 pp.
[12] Ong, J.E. & Gong, W.K. (2013) Structure, Function and Management of Mangrove Ecosystems. ISME Mangrove Educational Book Series No. 2. International Society for Mangrove Ecosystems (ISME), Okinawa, Japan, and International Tropical Timber Organization (ITTO), Yokohama, Japan.
[13] Hogarth, P.J. (1999). The biology of mangroves. Oxford University Press, 228pp.
[14] Walker, P. and Wood, E. (2005). Coral reef. Facts On File Inc, 175pp.
[15] Allen, G.R., and Steene, R. (1999). Indo-Pacific Coral reef – Field guide. Tropical reef Research, 378 pp.
[16] Barange, M., Field, G.J., Harris, P.R., Hofmann, E.E., Perry, R.I. and Werner, E.F. (2010). Marine ecosystem and global change. Oxford University Press, 412 pp.
[17] Poff, L.N., Prinson, M.M. and Day, J.W.J. (2002). Aquatic ecosystems and global climate change. Prepared for the Pew Center on Global climate change, 57pp.

Date: *June 23, 2015*
Lecturer: