Course Syllabus

1. Program of Study	Bachelor of Science (Biological Sciences) Bachelor of Science (Environment)
Faculty/Institute/College	Mahidol University International College Faculty of Science, Faculty of Environment and Resource Studies, Mahidol University
2. Course Code	ICBI 317
Course Title	Aquatic Ecology
3. Number of Credits	4 (3-2-7) (Lecture/lab/Self-study)
4.Prerequisite *(s*)	none
5.Type of Course	Elective

6. Trimester / Academic Year

Trimester 3/every academic year

7.Course Condition

Number of students is 20-30.

8.Course Description

Hydrological cycle; physico-chemical properties of water; light in aquatic environment; physical limnology; biological activity in lakes; nutrient limitation; tropic interaction in lakes; characteristics of and material flow in streams and rivers; tides and estuarines; practical exercises included.

9.Course Objective *(s)*

By the end of the course students should be able to describe and explain:

1. the hydrological cycle and its reservoirs
2. the relationship between temperature, salinity and density of water
3. the relationship between temperature, salinity and dissolved oxygen (DO) and the factors affecting DO concentration in aquatic systems
4. the importance of light in aquatic environments
5. lake types and seasonal patterns of thermal stratification and biological productivity
6. the relationship between nutrient supply and plant productivity
7. biomanipulation of lake ecosystems as a form of management
8. material transport in streams and rivers
9. the difference between autochthonous and allochthonous inputs to aquatic systems
10. the River Continuum Concept (RCC) and the Flood Pulse Concept (FPC)
11. the types of estuaries and estuarine biodiversity and productivity.

10.Course Outline

week	Topics/Seminar	Hours			Instructor
		Lecture	Lab	Self-study	
1	Hydrological cycle / hypsographic curves	3	2	7	Dr.Wayne Phillips
2	Physical + chemical properties of water	3	2	7	Dr.Wayne Phillips
3	Light and aquatic systems	3	2	7	Dr.Wayne Phillips
4	Physical limnology	3	2	7	Dr.Wayne Phillips
5	Biological activity of lakes (+ Mid-term exam)	3	2	7	Dr.Wayne Phillips
6	Trophic interactions in lakes	3	2	7	Dr.Wayne Phillips
7	Nutrient limitation in aquatic systems	3	2	7	Dr.Wayne Phillips
8	Streams and rivers	3	2	7	Dr.Wayne Phillips
9	Autochthonous and allochthonous inputs	3	2	7	Dr.Wayne Phillips
10	River Continuum Concept Flood Pulse Concept	3	2	7	Dr.Wayne Phillips
11	Estuaries	3	2	7	Dr.Wayne Phillips
FINAL EXAMINATION					
	Total	33	22	77	

11. Teaching Method *(s)*

Lectures, in-class practical exercises, discussion, self-study and field trip with practical exercises

12. Teaching Media

1. Powerpoint Presentations
2. Texts and teaching materials

13. Measurement and Evaluation of Student Achievement

Student achievement is measured and evaluated by

13.1 The ability to explain the hydrological cycle and its reservoirs

13.2 The ability to explain the relationship between temperature, salinity and density of water

13.3 The ability to explain the relationship between temperature, salinity and dissolved oxygen (DO) and the factors affecting DO concentration in aquatic systems

13.4 The ability to explain the importance of light in aquatic environments

13.5 The ability to describe the lake types and seasonal patterns of thermal stratification and biological productivity

13.6 The ability to explain the relationship between nutrient supply and plant productivity

13.7 The ability to explain the biomanipulation of lake ecosystems as a form of management

13.8 The ability to explain the material transport in streams and rivers

13.9 The ability to explain the difference between autochthonous and allochthonous inputs to aquatic systems

13.10 The ability to explain the River Continuum Concept (RCC) and the Flood Pulse Concept (FPC)

13.11 The ability to explain the types of estuaries and estuarine biodiversity and productivity.

Student's achievement will be graded according to the college and university standard using the symbols: A, B+, B, C+, C, D+, D and F. Assessment made from stated criteria: students with 80%+ obtain grade A Students must attend at least 80% of the total class hours of this course.

Field trip report (x2)	30%
Assignments (x4)	20%
Mid-term exam	20%
Final exam	30%

14. Course evaluation

14.1 Students' achievement as indicated in number 13 above.

14.2 Students' satisfaction towards teaching and learning of the course using questionnaires.

15. Reference *(s)*

Dobson, M. and Frid, C. Ecology of aquatic systems. UK. Longman. 1998.

Adams, S.M. (ed), Biological indicators of aquatic ecosystem stress. USA. American Fisheries Society, Bethesda. 2002.

Talling, J.F. and Lemoalle, J. Ecological dynamics of tropical inland waters. USA. Cambridge University Press. 1998.

Wetzel, R.G. and Likens, G.E. Limnological analysis. USA. Springer-Verlag. 2000.

Wetzel, R.G. Limnology: lake and river ecosystems. USA. Academic Press, 2001.

Additional readings set by instructor

16. Instructor *(s)*

Dr. Wayne Phillips

17. Course Coordinator

Dr. Wayne Phillips