Course Syllabus

1. Name of Curriculum Bachelor of Science (Biological Science).
Faculty/Institute/College International College, Mahidol University

2. Course Code ICBI 316
Course Title Environmental Microbiology

3. Number of Credits 4(3-2-7) (Lecture / Lab./self-study)

4. Prerequisite ICBI 211

5. Type of Course Elective course

6. Trimester / Academic year
First or Second Trimester of every academic year

7. Course Condition
Number of students is 20-30.

8. Course Description
Study the ecological aspects of microbes in both freshwater and marine environments; aspects of water quality and world diseases, sanitation and quality of life; participation in current event news discussions on environmental topics; and learn applicable methods and standards in environmental testing.

9. Course Objective
1. Students should distinguish important lake morphology and stratification,
2. Students should learn the importance of nutrient supplies and pollution on microbial populations,
3. Students should be able to demonstrate current techniques in testing water quality and isolating potential microorganisms.

10. Course Outline

week	Topics/Seminar	Hours			Instructor
		Lecture	Lab	Self-study	
1	-Introduction -World water problem and lake morphology Lab: Introduction	3	2	7	Dr. Michael Hurt
2	-Chemical stratification -Nutrient sources Lab: Aquatic methods and techniques	3	2	7	Dr. Michael Hurt
3	-Biomass/activity methods -Extreme environments Lab: Water testing/Coliform testing I	3	2	7	Dr. Michael Hurt
4	-Biofilms/Quorum sensing	3	2	7	Dr. Michael

	Lab: Water testing/Coliform testing II				Hurt
5	-Genetic transfer in aquatic environments -Nutrient cycles Lab: Water testing/Coliform testing III	3	2	7	Dr. Michael Hurt
6	-Nutrient cycles **-Test**	3	2	7	Dr. Michael Hurt
7	-Waterborne diseases Lab: Advanced concentration techniques	3	2	7	Dr. Michael Hurt
8	-Problems in marine sciences -Ocean morphology Lab: Marine water sampling and testing	3	2	7	Dr. Michael Hurt
9	-The role of microbes in ocean processes -Symbiotic associations/marine diversity Lab: Field trip	3	2	7	Dr. Michael Hurt
10	-Marine waterborne diseases	3	2	7	Dr. Michael Hurt
11	-Marine microbes and human society	3	2	7	Dr. Michael Hurt
	Total	33	22	77	Dr. Michael Hurt
Final Examination					

Half the class will be dedicated to doing water testing in the laboratory. Attendance for lab days will be taken, and all absences will count towards the overall lab grade.
There will be a mandatory overnight field trip to Pattaya near the end of the term. The trip will focus on taking ocean water samples and measurements at both night and day times. The trip will represent 5% of the lab grade (5 of 20%).

11. Teaching Method *(s)*

1. Lecture
2. Suggested readings
3. Discussion in class

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 distinguish important lake morphology and stratification,

13.2 The ability to explain the importance of nutrient supplies and pollution on microbial populations,

13.3 The ability to demonstrate current techniques in testing water quality and isolating potential microorganisms

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. Minimal passing level is 60%. Student who earns 85% up will have Grade A, 80-84% Grade B+ , 75-79% Grade B, 70-74% Grade C+, 65-69% Grade C, 60-64% Grade D+, 55-59% D, less than 55 Grade F. Students must attend at least 80% of the total class hours of this course.

Ratio of mark	
Test#1	25%
Final Examination	30%
Class participation	25%
Lab participation	20%
Total	100%

Range judges: $X \pm 2SD$ will be C^{+} - C

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. References

Sigee, D. Freshwater microbiology. USA. John-Willey and Sons, 2005.

Munn, C.B., Munn, C. Marine microbiology and applications. USA. BIOS Scientific Publishers, 2004.

16. Instructors

Dr. Michael Hurt

17. Course Coordinator

Dr. Michael Hurt