Course Syllabus

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

2. Course Code ICBI 315
Course Title Microbial Physiology and Genetics

3. Number of Credits 4(4-0-8) (Lecture / Lab./self-study)

4. Prerequisite ICBI 211, ICBI 212

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
Microbial growth, metabolism; microbial structures and functions; gene structure regulation of microbial metabolism; microbial genetic structure; maintenance, expression, and exchange of genetic materials in microbial cells.

9. Course Objective
By the end of the course, students should be able to
-Understand the metabolic system of various microorganisms
-Understand the genetic system of various microorganisms

10. Course Outline

Week	Topic/Seminar	Hours			Instructor
		Lecture	Lab	Self study	
1	Introduction: Overview of Microbiology and Cell Biology	4	0	8	Dr. Prayad Pokethitiyook
2	Nutrition, metabolism and growth	4	0	8	Dr. Prayad Pokethitiyook
3	Molecular genetics and regulation of gene expression	4	0	8	Dr. Prayad Pokethitiyook
4	Genetic mutation and engineering	4	0	8	Dr. Prayad Pokethitiyook
5	Viruses	4	0	8	Dr. Prayad Pokethitiyook
6	**Midterm Exam**	4	0		Dr. Prayad Pokethitiyook
7	Fungi and actinomycetes.	4	0	8	Dr. Prayad Pokethitiyook
8	Metabolic diversity I: Photosynthesis; Nitrogen fixation	4	0	8	Dr. Prayad Pokethitiyook
9	Metabolic diversity II: G(+) and G(-)	4	0	8	Dr. Prayad Pokethitiyook

	bacteria				
10	Metabolic diversity III: Sulfur- and Iron-oxidizing bacteria; Metanotrophs and methylotrophs	4	0	8	Dr. Prayad Pokethitiyook
11	Metabolic diversity IV: Archaea.	4	0	8	Dr. Prayad Pokethitiyook
Final Examination					
	Total	**44**	0	88	

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 describe the metabolic system of various microorganisms

13.2 The ability to describe the genetic system of various 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

Midterm Examination	40%
Final Examination	40%
Assignments and quizzes	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

Madigan, M.T., Martinko, J.M. and Parker, J. B. Biology of microorganisms. 8th Edition. Australia. Prentice-Hall, Inc. 1997.

16. Instructors

Associate Professor Dr. Prayad Pokethitiyook

17. Course Coordinator

Associate Professor Dr. Prayad Pokethitiyook