

Course Syllabus

1. **Name of Curriculum** Bachelor of Science (Biological Science)
Faculty/Institute/College International College, Mahidol University
2. **Course Code** ICBI 414
Course Title Industrial Microbiology
3. **Number of Credits** 4(4-0-8) (Lecture / Lab./self-study)
4. **Prerequisite** ICBI 211
5. **Type of Course** Elective course
6. **Trimester / Academic year**
Second Trimester of every academic year
7. **Course Condition**
Number of students is 20-30.
8. **Course Description**
Physiology, nutrition and growth of microorganisms important to various industries. Control of microbial growth in industrial production process. Application of microorganisms in production of cells, primary and secondary metabolites.
9. **Course Objective**
By the end of the course, students should be able to
 - Understand the physiology, nutrition and growth of microorganisms that are important to various industries.
 - Understand how to control of microbial growth in industrial production process.
 - Understand the application of microorganisms in production of cells, primary and secondary metabolites

10. Course Outline

week	Topics/Seminar	Hours			Instructor
		Lecture	Lab	Self-study	
1	Introduction: Overview on microbial growth and metabolite production.	4	0	8	Dr. Saovanee Dharmsthiti
2	Fermentation and downstream processing.	4	0	8	Dr. Saovanee Dharmsthiti
3	Microbial enzyme production.	4	0	8	Dr. Saovanee Dharmsthiti
4	Fungi for food fermentation.	4	0	8	Dr. Saovanee Dharmsthiti
5	Microbial cell production.	4	0	8	Dr. Saovanee Dharmsthiti
6	Midterm Exam	4	0	8	Dr. Saovanee Dharmsthiti
7	Amino acid production	4	0	8	Dr. Saovanee

					Dharmsthiti
8	Alcohol production.	4	0	8	Dr. Saovanee Dharmsthiti
9	Acetic acid and other organic acids production	4	0	8	Dr. Saovanee Dharmsthiti
10	Antibiotics productions	4	0	8	Dr. Saovanee Dharmsthiti
11	Biotransformation.	4	0	8	Dr. Saovanee Dharmsthiti
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 physiology, nutrition and growth of microorganisms that are important to various industries.
- 13.2 The ability to explain how to control of microbial growth in industrial production process.
- 13.3 The ability to describe the application of microorganisms in production of cells, primary and secondary metabolites

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

Crueger, W. and Crueger, B. Biotechnology: A Textbook of industrial microbiology. USA. Sinauer Associates Inc. 1990.

Waites, M.J., Morgan, N.L. and Gary Higton, G. Industrial microbiology: An introduction. USA. Wiley-Blackwell. 2001.

16. Instructors

Assoc. Prof. Saovanee Dharmsthiti

17. Course Coordinator

Assoc. Prof. Saovanee Dharmsthiti