

SYLLABUS:

Date / Revision 23 May 2015 / 02 May 2017 / PP
Faculty Life Sciences (LS)
Study Program Chemical Engineering (CHE), Food Technology (FTE)

SUBJECT: Microbiology Laboratory

1 Basic Information

1.01	Subject Name	Microbiology Laboratory
1.02	Semester	4
1.03	Level	1
1.04	SKS	1
1.05	Mandatory / Curriculum	D-02
1.06	Subject Code	MIBL
1.07	Subject Code	FTE-CHE-D-LS-117
1.08	Year	2017 (7)
1.09	Quality Control	Final Test, OFSE, see evaluation
1.10	Limitations	Min 12 and Max 32 students in one class
1.11	Combined with	Food Technology and Chemical Engineering
1.12	Pre-requisite	Microbiology, Biology, Chemistry & Lab
1.13	Responsible	Dr. Tutun Nugraha
1.14	Revision	15-05-2017/pp

2 Description of Subject

This course will provide students with an opportunity to apply various basic principles that were given in class rooms, particularly during the classes of microbiology. Furthermore, students will also learn various new techniques that are used in the field of microbiology. . Students will be encouraged to employ logic and original thinking in order to use both qualitative and quantitative methods to solve a variety of problems.

3

Objectives

Microbiology is one of the fundamental courses that are required for all Life Sciences students. microbiology will become one of the fundamentals for many of the more intermediates and advanced applied courses to be given in the upper years in the curriculum. The laboratory work in microbiology given here will complement the concept of basic and applied microbiology given in the class room.

4

Competency

Through this subject students will understand various concepts relevant to microbiology laboratory currently used in the chemical and food industries, which includes

- General principal of microbiology as applied to the laboratory work
- Skills, procedures, and equipment typical to microbiology laboratory that related to the operations and safety
- Scientific report on the experiment that were carried out in the lab

5

Learning Approach / Methodology

- Lectures/ Class contact (time-tabled) supplemented with interactive questions and answers to build the projects;
- Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing;
- Student Study Effort: homework/assignment; preparation for test/quizzes/ examination.
- Writing assignments/presentations

6

Evaluation

5.1	Absence maximum	25%
5.2	Report	25 Points
5.3	Lab journal/safety	5 Points
5.4	Presentation /Simulation	-
5.5	Daily Quiz	10 Points
5.6	Final Examination	60 Points
	Total	100 Points

7

Text Book and Reference

- | | |
|---|---|
| 1 | <p>Main Text Book:</p> <ul style="list-style-type: none"> • D. Anderson, S. Salm, D. Allen, E. Nester. Nester's Microbiology: A Human Perspective, McGraw Hill, Edition: 8th. 2012. |
| 2 | <p>Supplement Textbooks:</p> <ul style="list-style-type: none"> • K. Talaro, B. Chess: Foundation in Microbiology, McGraw Hill; Edition: 8th. 2012. • G. J. Tortora, B. R. Funke, C. L Case. An Introduction of Microbiology, Pearson; 11th, 2013. |

8 Content / Topics of Lecture

Week	Content/ Topics of Lecturing	Text Book	Remark
1	General Experiment Rules in Laboratory <ul style="list-style-type: none"> • Introduction Safety procedure, material safety data sheet, personal protective equipment • Experiment schedule Introduction to Research project by Students 		1 x 3 x 50 minutes
2,3	Media and Sterilization <ul style="list-style-type: none"> • Media • Sterilization 	Anderson, Salm, Allen, Nester, Chapter	1 x 3 x 50 minutes
4,5	Inoculating Microorganism Around Us <ul style="list-style-type: none"> • Inoculate microorganism around us using aseptic technique. • Understand why aseptic techniques are needed when working in microbiology 	Anderson, Salm, Allen, Nester, Chapter	1 x 3 x 50 minutes
6,7	Pour Plate Technique <ul style="list-style-type: none"> • Culturing/sub culturing aseptically. • Introduction the definition of pure culture and the principles of culture isolation • Pure isolation and microbes counting by pour plate technique. 	Anderson, Salm, Allen, Nester, Chapter	1 x 3 x 50 minutes
8	MIDTERM SEMESTER BREAK		
9,10	Spread Plate Technique <ul style="list-style-type: none"> • Pure culture isolation by spread plate technique • Microbes counting by spread plate technique 	Anderson, Salm, Allen, Nester, Chapter	1 x 3 x 50 minutes
11,12	Isolation of Microorganism <ul style="list-style-type: none"> • Introduction pure isolate culture • Making pure isolate culture independently. 	Anderson, Salm, Allen, Nester, Chapter	1 x 3 x 50 Minutes
13,14	Microorganism Quantification <ul style="list-style-type: none"> • Introduction of microorganism quantification. • The quantity of microorganism in particular sample. • Several technique to quantity microorganism such as spectrophotometry method 	Anderson, Salm, Allen, Nester, Chapter	1 x 3 x 50 minutes
15	Final Examination		