

# Applied Microbiology

Syllabus Number

5D248

Special Subjects

Elective 2 credit

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## 1. Course Description

The lecture mainly explains the industrial application on fermented foods, functional foods, antibiotics, agrochemicals, and industrial enzymes that utilize the microorganism functionality (DP1, DP2).

## 2. Course Objectives

Students can understand fermented foods, functional foods, antibiotics, agrochemicals, and industrial enzymes that utilize the microorganism functionality.

## 3. Grading Policy

Grading is determined with the final examination (100 %). Attendance more than 2/3 is necessary to take the examination. Reexamination is not going to be held. Feedback on the test will be conducted after the final lecture.

## 4. Textbook and Reference

Textbook

The lecture will be conducted with handouts.

## 5. Requirements(Assignments)

Before the lecture, please examine the content of the syllabus (30 min). Lecture will be conducted according to handouts. After the lecture, please find new information on your interested fields by using books or internet (1 hour).

## 6. Note

## 7. Schedule

- [1] Lecture guidance Function of genes in microorganisms
- [2] Function and characterization of enzymes
- [3] Effects of enzymes produce by microorganisms on ecological system
- [4] Metabolism and synthesis of substances in microorganisms : carbohydrate metabolism, photosynthesis, and amino acid synthesis
- [5] Fermented foods (1) : alcoholic beverage
- [6] Fermented foods (2) : plant fermented foods and fermented dairy products
- [7] Utilization of microorganisms to agriculture and drainage processing
- [8] Comparison between recombinant DNA technology and mutation technology by chemical or ultraviolet treatments
- [9] Production of useful compounds by microorganisms (1) : amino acid and organic acid fermentation
- [10] Production of useful compounds by microorganisms (2) : nucleic acid fermentation and production of antibiotics
- [11] Production of useful compounds by microorganisms (3) : utilization of microorganisms to agriculture
- [12] Industrial use of enzymes produced by microorganisms (1) : utilization of enzymes to foods
- [13] Industrial use of enzymes produced by microorganisms (2) : utilization of detergent enzymes to clothing
- [14] A market of enzymes in the industrial use and patent strategy
- [15] Summary and final examination