Fundamental Microbiology

Syllabus Number 5C123
Basic Major Subjects
Elective Requisites 2 credit

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1. Course Description

The lecture will explain the roles of microorganisms, which are different from those of plants and animals in nature. Furthermore, it will explain the specific cellular structure and function, and the interaction with plants, animals, and insects (DP1, DP2).

2. Course Objectives

Students can understand fundamental properties and roles of microorganisms in nature.

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, history of microbiology : discovery of microorganisms and opening of microbiology
[2] Ecology and environment of microorganisms : role of microorganisms in nature
[3] Classification, nomenclature, and characterization of microorganisms
[4] Class and characterization of microorganisms : fungi and bacteria
[5] Classification of microorganisms by cell structure : eukaryotic and prokaryotic microorganisms
[6] Classification of microorganisms by metabolism : aerobic and anaerobic bacteria, autotrophic and heterotrophic bacteria
[7] Growth of microorganisms : growth method, growth curve, and method to measure the growth
[8] Environmental factors for the growth of microorganisms : nutrition, temperature, pH, oxygen, and ultimate environment
[9] Cultivation method of microorganisms : liquid and solid cultures, static and concussion cultures
[10] Production of beneficial substances : production of alcohol, citric acid, and glutamic acid
[11] Animals and microorganisms : symbiosis of human and intestinal bacteria
[12] Plants and microorganisms : symbiosis of plants and nitrogen fixing bacteria, interaction between plants and the pathogens
[13] Insects and microorganisms : symbiosis of bacteria and insects such as beetle, aphid, and cockroach
[14] Interaction between the microorganisms
[15] Summary and final examination