Plant Physiology

Syllabus Number 5I264
Special Subjects
Elective 2 credit
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1. Course Description

Plant physiology is a basic field of plant science, and it concerns wide range of view from molecular level to individual level.
This course covers the followings:
1. Major biological characteristics of plants are compared with those of the other kinds of living things.
2. Basic knowledge about photosynthesis and plant metabolism should be obtained.
4. Control of plant growth, development and transport of water and hormone should be understood.

The aim of this course is to help students acquire the DP1 and DP2 related knowledge, technique and performance. Students will carry out fieldwork for identification of leaf development and photomorphogenesis, and they are required to report about it.

2. Course Objectives

At the end of the course, participants are expected to
(1) Explain the major characteristics and function of plants in comparison with those of animals and microorganisms.
(2) Construct the academic basis of plant science that should be applied sciences such as agriculture, forestry, pharmacy, and environmental biology.
(3) Relate the basic knowledge obtained in the lecture and outdoor observation in the field work.

3. Grading Policy

Your final grade will be calculated according to the following process: Reports (30%) and term-end examination (70%). In each class, a test will be conducted to review the lecture. Reports will be returned and important points will be summarized in the class.

4. Textbook and Reference

Textbook
Shioi, Inoue, Kondo Eds. (2009) Basic master Plant Physiology (in Japanese)

Ohme, ISBN978-4-274-20663-4

5. Requirements(Assignments)

- Handouts should be hold in a letter file, and bring them every classes. Clear folder is not recommended.
- You are welcome to come and ask questions.

6. Note

7. Schedule

[1] Life cycle of plants (1): Characteristics of plant structure

[2] Life cycle of plants (2): Mechanisms of transport of water and solute

[3] Life cycle of plants (3): Development and differentiation of plants

[4] Life cycle of plants (4): Genetic control of development and differentiation of plants

[5] Life cycle of plants (5): Light dependent plant growth and photorecepoters -photomorphogenesis

[6] Life cycle of plants (6): Light dependent plant growth and photorecepoters - regulation of plant movement

[7] Life cycle of plants (7): Control of plant hormones

[8] Life cycle of plants (8): Regeneration mechanisms of plants

[9] Life cycle of plants (9): Induction of flowering

[10] Metabolism and energy capture (1): Metabolic pathway of cell respiration of plant

[11] Metabolism and energy capture (2): Photochemical system of photosynthesis

[12] Metabolism and energy capture (3): Variety of photosynthetic systems

[13] Metabolism and energy capture (4): Metabolism of sugar and lipid

[14] Metabolism and energy capture (5): Assimilation of inorganic nutrition

[15] Metabolism and energy capture (6): Synthesis and function of secondary metabolites