科目ナンバリング	U-LAS14 20065 LE68						
授業科目名<英訳>	Introduction to Plant Physiology-E2 Introduction to Plant Physiology-E2			担当者所属職名・氏名	農学研究科　教授　Daniel Epron		
群	自然科学科目群		分野(分類)	生物学(各論)		使用言語	英語
旧群	B群	単位数	2単位	週コマ数	1コマ	授業形態	講義（対面授業科目）
開講年度・開講期	2026・後期	曜時限	月2	配当学年	主として1・2回生	対象学生	全学向

[授業の概要・目的]

Land plants adapt to the environment and at the same time have developed distinctive structures and functions that have great influence on the environment as well. In this lecture we outline the physiological, morphological and anatomical characteristics that are the basis of the growth and survival of plants. We will discuss how these attributes are integrated and coordinated at the whole plant level to better understand the ecology of species both in their natural range and when used in agriculture and forestry. This course broadly introduces the physiological functions of plants in an ecological perspective.

[到達目標]

Upon successful completion of this course, students will be able to understand the physiological processes underlying plant growth and development, how environmental factors influence these processes, and how knowledge of plant physiology is useful for crop, grassland and forest management.

[授業計画と内容]

Course schedule:
1. Introduction to plant physiology in an ecological perspective
2. Leaf photosynthesis: adaptation to sun and shade
3. Carbon assimilation and temperature
4. C3 and C4 plants in an evolutionary perspective
5. Respiration and carbon use efficiency
6. Effects of environmental factors on plant respiration
7. Growth and allocation
8. Storage of carbohydrates
9. Long distance transport of carbohydrates
10. Mineral uptake and translocation
11. Nutrient productivity and nutrient use efficiency
12. Water in cells, plants and soils
13. Water transport in plants
14. Control of plant water loss
≪End of Term Exam≫
15. Feedback

[履修要件]

Beneficial but not mandatory: basic knowledges in biology (high school)

[成績評価の方法・観点]

Grading: Quizzes or questions based on previous class contents (after each class on LMS, 50%), end of term exam (50%).
In no case will English language proficiency be a criterion for evaluating students. Tests and exams are designed to allow short answers.
Class attendance is expected: students who are absent more than three times without sound reasons

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(documented unavoidable absence) will not be credited.

[教科書]

Lecture notes and slides will be provided before each class (uploaded on LMS).

[参考書等]

（参考書）

W Larcher 『Physiological Plant Ecology』（Springer）ISBN:ISBN 978-3-540-43516-7（Recommended books and website to deepen the course content (not mandatory)）

H Lambers, FS Chapin, TL Pons 『Plant Physiological Ecology』（Springer）ISBN:ISBN 978-0-387-78340-6（Recommended books and website to deepen the course content (not mandatory)）

R Munns, S Schmidt, C Beveridge 『Plants in Action: a resource for teachers and students of plant science』（http://plantsinaction.science.uq.edu.au/）（Recommended books and website to deepen the course content (not mandatory)）

[授業外学修（予習・復習）等]

Students are expected to review the course content of previous classes and to read the materials distributed before each class (about two hours between two classes).

[その他（オフィスアワー等）]

Students are encouraged to ask questions and to make comments during the class.
Students are welcome to arrange appointments by email, even outside the official office hour, for questions and discussion.

[主要授業科目（学部・学科名）]