

“Functional plant anatomy”		
Institute of Plant Genetics Polish Academy of Sciences	Coordinator: dr hab. Lidia Błaszcyk, prof. IPG PAS	Lecturer: Prof. Robert Malinowski IPG PAS

General information:

Number / form (s) / type (s) of classes	A series of lectures, 12 didactic hours (supervised by lecturers)
Didactic cycle	Summer semester 2022/2023
Language	English
ECTS credits	2

Objective of the course:

To understand basic principles of plant anatomy

Topics:

1. Plant cell components (1hr) [07/11/2023]
2. Evolutionary anatomical achievements that allowed plants to conquer the land – 1 hr lecture (2023) [07/11/2023]
3. Plant meristems, tissues and specialized cells (1hr) [21/11/2023]
4. Plant Embryogenesis (1 hr) [21/11/2023]
5. Roots (1hr) [05/12/2023]
6. Shoots (1hr) [05/12/2023]
7. Leaves (1 hr) [19/12/2023]
8. Sexual organs in plants and propagation [19/12/2023]
9. Morphological and anatomical adaptation of plants to atypical ecological niches [9/01/2023]
10. Anatomical and morphological plant protective structures [9/01/2023]
11. Plant experimental models in biology [16/01/2023]
12. Anatomical and morphological features that can be possible target for future crop improvement [16/01/2023]

Effects of the course (in terms of knowledge, skills):

1. Student will acquire basic information on the structural and functional elements of a plant cell
 2. Will gain information on anatomical diversity between primitive plant organisms and evolutionary achievements that allowed plants to colonize different land environments
 3. Will gain knowledge on plant meristematic regions and basic principles of meristematic tissues properties and function
 4. Will learn on plant embryo formation and different types of embryogenesis in plants
 5. Will learn root anatomy and morphological types of roots
 6. Will learn shoot anatomy, its functional types and transformations
 7. Will learn on leaf development, its anatomy and morphology across the plant kingdom
 8. Will learn how plant propagation evolved and which structures are used by different plant species
-

9. Will acquire information about morphology and anatomy of plants that developed alternative living strategies (carnivorous, parasitic, underwater, desert plants etc.). Lecture will include also the presentation of plants that have unique developmental strategies.
 10. Will gain information on cellular and anatomical and morphological aspects that help plants to withstand adverse conditions
 11. Will learn on the most popular plant biology models in basic and translational research
 12. Will acquire the knowledge on the problems in plant production that could be solved by modification of anatomical and morphological traits in crop plants.
-
-

Course content:

- Basics of plant cell biology, anatomy and morphology
- Introduction to evolutionary aspects of plant development
- Introduction to plant developmental plasticity and cellular adaptive mechanisms
- Introduction to functional models in plant biology and genetic engineering of a plant body and growth patterns

Teaching methods / techniques:

lectures in English, on site lectures [no zoom lectures unless pandemic situation occurs]
practical presentation of plant objects and integrative work with students

Evaluation of learning outcomes:

- mini essay and written exam