Modern agronomy		
Institute of Plant Genetics Polish Academy of Sciences	**Dr hab. Katarzyna Panasiewicz** katarzyna.panasiewicz@up.poznan.pl Coordinator	**Lecturers: team of scientists from the Department of Agronomy, Poznan University of Life Sciences and the representative of AGRII Poland Ltd.**

General information:

Number / form (s) / type (s) of classes	A series of lectures, 9 x 90 minutes + field visit 20 didactic hours (supervised by lecturers)
Didactic cycle	Autumn-winter 2018
Language	English
ECTS credits	2

Objective of the course: Expanding knowledge concerning the cultivation of agricultural plant species for food and energy purposes

Topics of lectures:

1. Biodiversity of arable fields. Dr. hab. Robert Idziak, Poznań University of Life Sciences (PULS)
2. Polish and European agricultural plants. Dr. Grażyna Szymańska, PULS
3. Tillage systems. Dr. Tomasz Piechota, PULS
4. Digital farming. Mgr Leszek Dryjanski, AGRII Poland Ltd.
5. Compensating factors for simplified crop rotations. Dr. hab. Leszek Majchrzak, PULS
6. Integrated pest management. Dr. Zuzanna Sawinska, PULS
7. Adjuvants for Agrochemicals. Dr. Łukasz Sobiech, PULS
8. Biomass and bioenergy. Dr. hab. Katarzyna Panasiewicz, PULS
9. Seed quality assessment. Dr. hab. Katarzyna Panasiewicz, PULS

+ field visit at the Research and Education Center Gorzyń, Branch Złotniki, PULS

Effects of course: in terms of knowledge, skills: PhD students will gather knowledge about aspects of sustainable development. PhD student:

- gathers knowledge about the natural and human impact on different type of ecosystems and how to evaluate its biodiversity,
- knows the tasks of cultivation and can characterize individual tillage systems,
- understands the importance of soil cultivation for crop production and environmental protection,
- can define phenomenon of allelopathy,
- understands the dangers associated with greater pressure of diseases and pests in the conditions of frequent cultivation of plant species after themselves,
- knows the possibilities of counteracting the accumulation of diseases and pests caused by frequent cultivation of the same plant species,
- is able to use simple methods of new technical and technological solutions and critically evaluate them in terms of natural and economic,
- understands the need for constant and targeted improvement of their qualifications and professional competences regarding the achievements of modern agriculture,
- can explain the term and methods used in digital farming,
- acknowledges the current advantages and future perspectives of digital farming
- can define influence of adjuvant on modern agriculture,
- understands the risks associated with a higher pressure of diseases and weeds in modern production technology and can properly choose an adjuvant for a pesticide,
- can describe globally and locally available conventional and renewable energy sources – the perspective of use,
- can define energy resources, plant species for the production of biofuels their cultivation and use,
- knows EU regulations concerning the rules for the use of renewable energy,
- can describe the morphology of agricultural plant seeds,
- understands the role of seed quality,
- is able to determine seed value and seed vigor parameters.

Course content:

- biodiversity of arable land and grasslands,
- groups of agricultural crops and species names,
- list the main agricultural plants,
- economic importance and destiny of each species,
- natural conditions appropriate for the cultivation of each species,
- chemical composition and knows nutritional and fodder usefulness for each species,
- history, definition and tasks of soil cultivation,
- tools used for growing the soil - the basics of construction, carried out tasks
- distribution of tillage systems
- characteristics of tillage systems, their advantages and disadvantages
- prevalence and development perspectives of individual farming systems
- basic concepts related to the crop rotation, monoculture, elements of the crop rotation,
- definition of digital farming,
- methods currently used in digital farming,
- perspectives of digital farming,
- basic concepts related to allelopathy, sources of allelic compounds, interaction of chemical compounds on physiological processes,
- types of catch crops and their role in simplified tillage systems,
- plant protection and food safety.
- occurrence of diseases, weeds and pests in agricultural plants.
- thresholds for the harmfulness of diseases, weeds and pests in agricultural plants.
- registration of plant protection products in accordance with the EPPO method.
- basic concepts related to the adjuvants and pesticides
- basic concepts related to the division of adjuvants with their proper selection.
- EU legislation on renewable energy,
- plant sources of renewable energy,
- biomass and its resources in the country and the world: wood, plant biomass, waste from industrial and municipal,
- recognition of seeds of the basic crop species,
- knowledge of the basic definitions of sowing value and vigor and can carry out the assessment of seed quality,

Teaching methods / techniques:

• lectures in English, using multimedia techniques
• field visit

Evaluation of learning outcomes:

- **written exam**