SYLABUS

Nazwa przedmiotu/ Course title	Contemporary trends in plant cultivation
Nazwa jednostki prowadzącej przedmiot/Unit name	The F. Górski Institute of Plant Physiology Polish Academy of Sciences
Kierunek studiów/Field of study	Doctoral School of Natural and Agricultural Sciences
Forma studiów/Type of study	Full-time
Rodzaj przedmiotu/ Course type	Compulsory
Rok i semestr studiów/Year and semester of study	Summer semester 2024/2025
Stopień, imię i nazwisko koordynatora przedmiotu/ Degree, name of co-ordinator	Prof. dr hab. inż. Iwona Żur
Stopień, imię i nazwisko osoby prowadzącej (osób prowadzących) zajęcia z przedmiotu/ Degree, name of person(s) teaching the course	Dr hab. inż. Agnieszka Klimek-Kopyra Dr hab. inż. Magdalena Simlat
Forma(y) zajęć, liczba realizowanych godzin/ Type of course, number of hours	Lectures, 7h
Cele przedmiotu/Aim of the course	
The aim of the course is to introduce plant cultivation in terms of different agricultural and agronomic systems that are beneficial to the producer and the environment, the basics of creating crop varieties and modern biotechnological techniques used as tools in plant breeding and molecular diagnostics.	
Wymagania wstępne/ Prerequisites	Basic knowledge of biology.

Efekty kształcenia/ Learning outcomes	Wiedza/Knowledge: A student has the knowledge and understanding of agricultural systems, systems of tillage, principles of crop rotation and the use of natural, organic, and mineral fertilizers in different agricultural systems. In addition, the student will know and understand the genetic basis of crop improvement: conventional methods of plant breeding and the principles of heterosis and hybrid breeding as well as the importance of assisting plant breeding with molecular techniques and biotechnology. Umiejętności/Skills: A student is able to estimate the extent of the risk resulting from the operation of a farm with a conventional system, the use of high doses of mineral fertilizers and synthetic plant protection products. A student is able to analyze the advantages of using organic fertilizers and intercrops in plant cultivation. A student is able to select the breeding methods depending on the species, its manner of propagation and the purpose of breeding, and to properly select the biotechnological methods supporting the plant breeding. Kompetencje społeczne/Attitudes: A student is prepared to perceive the threats of conventional farming system and mineral fertilization on the quality of plant raw materials. A student perceives the relations between the improvement of crop genotypes and progress in agriculture and changes

	in the natural environment. A student actively participates in discussion, independently constructs and presents arguments in favor of an integrated or organic farming system. A student formulates objective opinions on the importance of molecular and biotechnological techniques in crop improvement.
Treści programowe / Program content	
The course covers: 1.Farming systems (conventional, integrated, organic/ecological) 2.Tillage systems (conventional, reduced tillage, conservation tillage, direct seeding) 3.Principles of crop rotation (crop rotation, elements of crop rotation, stubble intercrops, winter intercrops, catch crops) 4.Fertilisers and fertilization in different farming systems 5.Plant breeding as a science, a practical activity, and a contemporary stage in the evolution of crop plants 6.Genetic basis of crop breeding 7.Conventional methods of plant breeding and basics of heterosis and hybrid breeding 8.Assisted plant breeding by biotechnological methods and the use of molecular markers for genotype identification.	
Metody dydaktyczne/ Teaching methods	Lectures
Sposób(y) i forma(y) zaliczenia / Evaluation	Pass mark. Successful completion of the course requires attendance at lectures and passing the final examination.
Metody i kryteria oceny/ Methods and criteria of assessment	Lectures: final grade on material learned in lectures.
Całkowity nakład pracy studenta potrzebny do osiągnięcia założonych efektów w godzinach	7 h - lectures, 10 h - exam preparation, 1 h- exam (0.5 ECTS)

oraz punktach ECTS /Total student workload needed to achieve the assumed effects in hours and in ECTS credits	
Język wykładowy/ Language	English
Praktyki zawodowe w ramach przedmiotu / Internship as part of the subject	-
Literatura /Literature	1. Kotecki A. (red) 2020. Uprawa roślin. Wyd. UWP 2. 4. Szempliński W. 2012, Rośliny rolnicze. Wyd. UWM Olsztyn 3. Villalobos F.J., Fereres E. (Ed.) 2016. Principles of Agronomy for Sustainable Agriculture. Springer 4. Michalik B. (red.). Hodowla roślin z elementami genetyki i biotechnologii. PWRiL. Poznań, 2009 5. Acquaah G. Principles of plant genetics and breeding. Blackwell Publishing, 2007 6. Suza, W., & Lamkey, K. (Eds.). Molecular Plant Breeding. Iowa State University Digital Press. DOI: 10.31274/isudp.2023.133, 2023 7. Journals: Euphytica, Molecular Breeding
Podpis koordynatora przedmiotu/ Signature of co-ordinator	
Podpis kierownik Szkoły Doktorskiej/ Signature of the Head of Doctoral School	

Passing rules

1.The exam is conducted and graded by the course coordinator.

2. The exam is conducted in the form of a written test.

3. The written exam consists of open and closed questions - single-choice or multiple-choice scored according to the following rules:

(a) maximum 2 points are awarded for a correct answer in an open question;

b) a correct answer in a single-choice question is awarded 1 point;

(c) for a correct answer to a multiple-choice question, 0.5 point is awarded for each correct answer.

4. The exam grade is based on the total points obtained in the written test and is determined according to the following rules:

Percentage (%) of the total points available	Grade	
	Verbal	Numerical
91 – 100	Very good	5,0
81 – 90	Good plus	4,5
71 – 80	Good	4,0
61 – 70	Satisfactory plus	3,5
55 – 60	Satisfactory	3,0
0 – 54	Fail	2,0

5. An unexcused absence (Terms and Conditions of the Doctoral School § 11 item 1e) from the examination will result in a grade of "2.0" (Fail).

6. The exam is passed when 55% of the total points possible in the written test have been obtained.

7. Positive grades in the examination are not subject to improvement to a higher grade.

8. If a doctoral student receives a fail grade in an exam, she/he is entitled to only one resit exam during the academic year.

9. The resit exam shall be conducted in accordance with these rules.

10. The grade is entered in the student book by the person conducting the exam.