Breeding methods of fruit plants

Educational subject description sheet

Basic information

Field of study
Course Offer for exchange students - second cycle studies, including uniform master studies (MA programmes)

Speciality
-

Organizational unit
Course Offer for exchange students

Study level
second cycle studies, including uniform master studies (MA programmes)

Study form
full-time studies

Education profile
General academic

Didactic cycle
2025/26

Subject code
PWMPWM2S_D.B100000P.00800.25

Lecture languages
english

Mandatory
Elective subjects

Block
Basic subjects

Disciplines

Coordinator	Sebastian Przybyłko
Teacher	Sebastian Przybyłko, Ewa Szpadzik, Kamila Bokszczanin

Period	**Examination**	**Number of ECTS points**
Winter semester	Exam **Activities and hours** Lecture: 15 Laboratory exercises: 15	3

Goals

Code	Goal
C1	The aim of the course is to provide students with knowledge concerning classical as well as modern methods of fruit plants breeding.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	knows the species and cultivars of fruit plants, their application and advanced methods of their breeding		Written exam
W2	knows and understands the basic concepts and principles of intellectual property protection		Written exam
Skills – Student can:			
U1	can independently analyze and evaluate the usefulness of breeding methods		Written exam, Report
U2	is able to plan and carry out breeding work and interpret the obtained results		Written exam, Report, Assessment of work in the laboratory
Social competences – Student is ready to:			
K1	is aware of the need for continuous training and professional and scientific improvement		Written exam
K2	shows an active attitude in the process of acquiring knowledge		Written exam
K3	is open to new breeding techniques to improve the quality of varieties of fruit plants		Written exam

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	The definition and aims of plant breeding. Distinctive traits of fruit crops. Classic breeding methods. Floral and fertilisation biology. Pollination. Seed handling. Juvenility. Seedling selection. Fruit evaluation. Mutation and chimeras. Modern breeding methods with the use of molecular biology tools. Breeding for specific characters.	W1, W2, U1, U2, K1, K2, K3	Lecture, Laboratory exercises

Course advanced

Activities	Methods of conducting classes
Lecture	Lecture
Laboratory exercises	Individual work, Observation

Activities	Examination method	Percentage
Lecture	Written exam	80%
Laboratory exercises	Assessment of work in the laboratory	10%
Laboratory exercises	Report	10%

Activities	Credit conditions
Lecture	Passing the exam on at least 51% points.
Laboratory exercises	Completing the task given at the begining of each lab exercises.

Literature

Obligatory

1. Chahal G.S., Gosal S.S. 2008.Principles and Procedures of Plant Breeding. Alpha Science International Ltd.
2. Harten van, A.M. 2007. Mutation Breeding. Cambridge University Press.
3. Janick J., Moore J.N. 1996. Fruit Breeding. John Wiley.& Sons, Inc.

Optional

1. Moore J.N., Janick J. 1983. Methods in Fruit Breeding. Purdue University Press.
2. Hanke M-V. Flachowsky H. 2017. Obstzüchtung und wissenschaftliche Grundlagen. Springer Spektrum.
3. Campa M. et al. 2024. Application of new breeding techniques in fruit trees. Plant Physiology. 194 (3).
4. Sansavini S. et al. 2004. Advances in apple breeding for enhance fruit quality and resistance to biotic stresses: New varities for the European market. Journal of Fruit and Ornamental Plant Research 12.
5. Other up to date scientific publication concerning the scope of fruit crops breeding issues.

Calculation of ECTS points

Activity form	Activity hours*
Lecture	15
Laboratory exercises	15
Preparation for the exam	20
Self-study on the content covered in class	25
Preparation of the report	15
Student workload	**Hours** 90
Number of ECTS points	**ECTS** 3

* hour means 45 minutes