



# UNIWERSYTET PRZYRODNICZY WE WROCŁAWIU

## Product storage and processing Educational subject description sheet

### Basic information

<p><b>Field of study</b> horticulture</p> <p><b>Speciality</b> -</p> <p><b>Organizational unit</b> The Faculty of Life Sciences and Technology</p> <p><b>Study level</b> Second-cycle (engineer) programme</p> <p><b>Study form</b> Full-time</p> <p><b>Education profile</b> General academic</p>	<p><b>Education cycle</b> 2021/22</p> <p><b>Subject code</b> WPTPOG-AMS.MI1BO.1919.21</p> <p><b>Lecture languages</b> english</p> <p><b>Mandatory</b> optional</p> <p><b>Block</b> major subjects (conducted) in foreign languages</p> <p><b>Disciplines</b> Agriculture and horticulture</p> <p><b>Subject related to scientific research</b> No</p> <p><b>Subject shaping practical skills</b> Nie</p>	
<p><b>Teacher responsible for the subject</b></p>	Ewelina Gudarowska	
<p><b>Other teachers conducting classes</b></p>	Ewelina Gudarowska	
<p><b>Period</b> Semester 1</p>	<p><b>Examination</b> credit</p> <p><b>Activities and hours</b> lecture: 20 project classes: 15</p>	<p><b>Number of ECTS points</b> 3.0</p>

## Goals

C1	Providing students with knowledge in the field physiological processes occurring in vegetables and fruits in the period straight before and during the storage
C2	Providing students with knowledge of conditions and methods of different species of horticultural crops storage. Principles of the construction and exploitation of the modern storage houses
C3	Providing students with knowledge of home fruit processing on the farm

## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	The student will get the skill of estimation the suitability of harvested vegetables and fruits for short and long period of storage. One has a knowledge of the conditions preferable for particular plant species as well as kinds and equipment of storage rooms.	OG_P7S_ WG07	written credit, project
<b>Skills - Student can:</b>			
U1	Acquired knowledge will allow the student to select the most efficient method of precooling, storage type, and providing the optimum conditions for short and long storage life vegetable and fruit crop species	OG_P7S_ U009	observation of student's work, active participation
<b>Social competences - Student is ready to:</b>			
K1	After completing the course, graduate may run or be employed in the company supplying vegetables and fruits to the wholesale and retail markets.	OG_P7S_ K003	active participation, participation in discussion

## Balance of ECTS points

Activity form	Activity hours*	
lecture	20	
project classes	15	
project preparation	10	
consultations	10	
lesson preparation	10	
exam / credit preparation	15	
<b>Student workload</b>	<b>Hours</b> 80	<b>ECTS</b> 3.0
<b>Workload involving teacher</b>	<b>Hours</b> 45	<b>ECTS</b> 1.7

<b>Practical workload</b>	<b>Hours</b> 15	<b>ECTS</b> 0.6
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\* hour means 45 minutes

### Study content

<b>No.</b>	<b>Course content</b>	<b>Activities</b>
1.	<p>1. State and perspectives for vegetable crops and fruits storage in the country and all over the world 2 h</p> <p>2. Life processes and physiological changes in vegetables during storage 4 h</p> <p>3. Life processes and physiological changes in fruits during storage 4 h</p> <p>3. Factors affected the storage ability of vegetables and fruits 2 h</p> <p>4. Optimal conditions for storage of vegetables and fruits 2 h</p> <p>5. Storage methods of vegetables and fruits 2 h</p> <p>6. Storage of vegetables and fruits in modern storage rooms and in KA 2 h</p> <p>7. Postharvest handling system 2 h</p>	lecture

2.	1. Determination of the date of maturity of fruits - test starch, extract 1h 2. Designate the date of maturity of the fruit - pulp firmness 1h 3. Calculation time for the best harvest of apples 1h 4. Diseases physiological apples during storage 1h 5. Fungal diseases of apples during storage 1h 6. Planning the storage facilities at plants -ćw.projektowe 1h 7. Planning the storage conditions of apples-quarter. Project 1h 8. Summary of news on the storage of fruits 1h 9. Determination of the harvest ripening vegetables for storage, ways of harvesting. Methods for extending the storage life of vegetables 1h 10. Design and construction of storage for household warzywniczego. Types of packaging for vegetables 1h 11. Technology vegetable storage with high storage stability 1h 12. Storage Technology vegetables on average the storage life of 1h 13. Storage Technology vegetables with low storage stability 1h 14. Bacterial diseases, fungal and physiological vegetables during storage 2h	project classes
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## Course advanced

### Teaching methods:

problem-solving method, computer lab/laboratory, discussion, lecture, classes

Activities	Examination methods	Percentage in subject assessment
lecture	written credit	40%
project classes	project, observation of student's work, active participation, participation in discussion	60%

## Literature

### Obligatory

1. Feerre, D. C., Warrington, I. J. (Eds.), 2003, Apples: botany, production, and uses. CABI Publishing, Wallingford
2. Anthony Keith Thompson, 2008. Fruit and Vegetables: Harvesting, Handling and Storage John Wiley & Sons
3. A Thompson, Robert K. Prange, Roger D Bancroft, Tongchai Puttongsiri, 2018. Controlled Atmosphere Storage of Fruit and Vegetables

### Optional

1. Janick, J., Horticulture science. W.H. 1986, Freeman and Company: New York
2. E. Lavher. Freezing Fruits and Vegetables for Food Storage
3. E. Lavher. Drying Fruits and Vegetables for Food Storage

## Kierunkowe efekty uczenia się

Kod	Treść
OG_P7S_K003	Absolwent jest gotów do podjęcia zawodowej i etycznej odpowiedzialności za produkcję owoców i warzyw wysokiej jakości z uwzględnieniem aspektów ochrony środowiska
OG_P7S_U009	Absolwent potrafi samodzielnie planować, przeprowadzać, analizować i oceniać zadania z zakresu szeroko rozumianego nowoczesnego ogrodnictwa, prawidłowo interpretuje rezultaty i wyciąga wnioski
OG_P7S_WG07	Absolwent zna i rozumie w stopniu pogłębionym zasady planowania i realizacji produkcji ogrodniczej, w obszarze gatunków i technologii powszechnie nie stosowanych w praktyce, mających charakter perspektywiczny dla ogrodnictwa polskiego i chińskiego