SZKOŁA GŁÓWNA GOSPODARSTWA WIEJSKIEGO

Food Packaging Systems

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** 2024/25 **Subject code** PWMPWM2S_D.B100000P.06401.24 **Lecture languages** english **Mandatory** Elective subjects **Block** Basic subjects **Disciplines** Food technology and nutrition

Coordinator	Monika Marcinkowska-Lesiak
Teacher	Monika Marcinkowska-Lesiak

Period	**Examination**	**Number of ECTS points**
Winter semester	Pass with grade **Activities and hours** Lecture: 15 Auditorium exercises: 15	4

Goals

Code	Goal
C1	The course "Food Packaging Systems" offers a comprehensive overview of the multifaceted field of food packaging, spanning historical evolution to contemporary techniques. Divided into eight parts, it covers topics ranging from the development of plastic materials and their quality identification to the engineering aspects of packaging machinery. Students delve into packaging methods utilizing various materials such as films, plastics, glass, and metal, while also exploring advanced techniques like vacuum, modified atmosphere, and aseptic packaging. By the end of the course, students gain a thorough understanding of how packaging materials and techniques influence food preservation, safety, and marketing in the food industry.

Entry requirements

The student should have a general knowledge of food technology and basic technologies used in the food industry.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	Student can assess the impact of various packaging methods on food quality.		Report, Test (written or computer based)
W2	Student has knowledge of packaging technologies in food production.		Report, Test (written or computer based)
Skills – Student can:			
U1	Student is able to use and analyze information on various packaging materials and food packaging systems in order to extend the shelf life of food.		Report, Test (written or computer based)
Social competences – Student is ready to:			
K1	Student can work in a group dealing with challenges related to food packaging.		Report, Test (written or computer based)

Study content

No.	Course content	Subject's learning outcomes	Activities

1.	Lectures: part 1. Introduction to food packaging (1h); part 2. Development of plastic materials and their quality identification (2h); part 3. Individual packaging systems and auxiliary equipment for food packaging (2h); part 4. Methods of packaging products in films and flexible packaging as well as rigid plastic packaging (2h); part 5. Vacuum and modified atmosphere packaging systems (2h); part 6. Methods of packaging products in glass packaging (2h); part 7. Methods of packaging products in metal packaging (2h); part 8. Aseptic packaging and packaging products in paper and cardboard packaging (2h); Laboratory classes: 1. Characteristics of selected food products and assessment of packaging materials suitability for their packaging; 2. Current legal regulations, labeling systems, and principles of food packaging design; 3. Qualitative identification of plastics (including DSC); 4. Influence of selected packaging methods on the quality and shelf life of food (MAP, VP) part I; 5. Influence of selected packaging methods on the quality and shelf life of food (MAP, VP) part II.	W1, W2, U1, K1	Lecture, Auditorium exercises

Course advanced

Activities	Methods of conducting classes
Lecture	Lecture, Laboratory (experiment), learning by experiment
Auditorium exercises	

Activities	Examination method	Percentage
Lecture	Report	50%
Lecture	Test (written or computer based)	50%

Activities	Credit conditions
Lecture	The content of the examination questions with the number of points obtained - 50% Number of points obtained from laboratory classes - 50%
Auditorium exercises	

Literature

Obligatory

1. Gordon L. Robertson: "Food Packaging: Principles and Practice"
2. Gordon L. Robertson : "Food Packaging and Shelf Life: A Practical Guide"
3. Richard Coles and Mark J. Kirwan: "Food Packaging Technology

Optional

1. Jorge Barros-Velázquez and M. Isabel González-González: "Active and Intelligent Food Packaging: Intelligent Packaging"
2. Otto G. Piringer and A. L. Baner: "Plastics Packaging for Food, Beverages, and Pharmaceuticals"
3. Sara Benyahia: "Packaging for Food Preservation"
4. N. C. Saha, Anup K. Ghosh, Meenakshi Garg, Susmita Dey Sadhu "Food Packaging, Materials,Techniques and Environmental Issues"
5. Alexandru Grumezescu "Food Packaging"

Calculation of ECTS points

Activity form	Activity hours*
Lecture	15
Preparation for exercises	10
Preparing a report	15
Preparation for the test	30
Self-study on the content covered in class	15
Auditorium exercises	15
Student workload	**Hours** 100
Number of ECTS points	**ECTS** 4

* hour means 45 minutes