

Załącznik nr 1**Course name:
PLANT PROTEINS**

ECTS	4
Course status	directional - optional (available for the learning path)
Course final assessment /evaluation of outcomes	graded pass
Prerequisite	no prerequisites

Main field of study:**Food Technology**

Educational profile	General academic
Code of studies and education level	SM/master
Semester of studies	2/summer
Language of instruction	English

Course offered by:

Name of faculty offering the course	Faculty of Food Technology
Name of department offering the course	Department of Carbohydrate Technology and Cereal Processing
Course coordinator	dr hab. inż. Rafał Ziobro, prof. URK, dr hab. inż. Dorota Gumul, prof. URK

Learning outcomes:

Symbol of outcome	Description of the learning outcome	Reference to main field of study outcomes	Area symbol*
KNOWLEDGE – student knows and understands			
PP_W1	unit operations and technological processes used in the isolation, separation and modification of plant proteins. Knows and understands the types and sources of raw materials and the considerations for the selection of raw material for the production of food safe for the consumer.	TŻ1_W02	RT
PP_W2	the complexity of the problem of variation in the quantitative and qualitative composition of protein and the theoretical and practical aspects of these issues in the context of standardization of the quality of raw materials for the production of protein rich products	TŻ1_W03	RT
PP_W3	the role of plant proteins in nutrition and prevention of diet-related diseases	TŻ1_W08	RT
SKILLS – student is able to			
PP_U1	apply analytical methods and operate analytical equipment allowing for qualitative evaluation of plant raw material, its standardization and refinement	TŻ1_U07	RT

PP_U2	use subject, methodological and experimental knowledge to independently plan, conduct, analyze and describe a research or design task in the field related to the field of study, formulate conclusions, conduct a critical analysis of the experiment	TŽ1_U04	RT
SOCIAL COMPETENCIES – student is ready to:			
PP_K1	assess the risks arising from the use of inappropriate raw materials and technologies	TŽ1_K04	RT
PP_K2	creatively search for ways to use new raw materials and technologies in plant processing	TŽ1_K01	RT

Teaching contents

Lectures		15 hours
Topics	Structure and composition of plant proteins and their consequences on nutritional value	
	Physical properties of plant proteins. Impact on processing.	
	Wheat gluten. Properties and applications	
	Other cereal proteins. Production, quality and use.	
	Pseudo-cereals as the source of gluten-free proteins. Technology and analysis.	
Potato protein and legume proteins.		
Comparison of nutritional value and pro-health properties of plant proteins.		
Protein concentrates and isolates. Milk and meat substitutes of plant origin.		
Accomplished learning outcomes		<i>PP_W1; PP_W2; PP_W3;</i>
Means of verification, rules and criteria of assessment		<i>written test; 60% correct answers for positive outcome. Weight- 50%.</i>
Classes:		15 hours
Topics	Production and evaluation of milk substitute based on oats.	
	Isolation and assessment of vital gluten, seitan preparation.	
	Evaluation and applications of plant-protein concentrates. Culinary uses of aquafaba.	
Accomplished learning outcomes		<i>PP_U1; PP_U2; PP_K1; PP_K2</i>
Means of verification, rules and criteria of assessment		<i>Students are assessed through demonstration of practical skills (40% of final grade)</i>

References:

Basic	<ol style="list-style-type: none"> 1 Elke K. Arendt, <i>Gluten-Free Cereal Products and Beverages Elsevier 2008, https://doi.org/10.1016/B978-0-12-373739-7.X5001-1</i> 2. R. H. Yada, <i>Proteins in food processing, Woodhead Publishing Ltd., Abington 2004</i> 3. Annamalai Manickavasagan, Loong-Tak Lim, Amanat Ali, <i>Plant Protein Foods, Springer 2022</i>
Supplementary	

Structure of learning outcomes

Area of academic study: R – Agricultural, forestry and veterinary sciences	ECTS **
Area of academic study: T – technological sciences	4 ECTS**

Structure of student activity

Contact hours	32	hrs.	1,7 ECTS**
---------------	----	------	------------

Including:	lectures	15	hrs.	
	classes and seminars	15	hrs.	
	consultations	1	hrs.	
	participation in research	0	hrs.	
	obligatory traineeships	0	hrs.	
	participation in examination	1	hrs.	
	e-learning	0	hrs.	0 ECTS**
	student own work	68	hrs.	2,3 ECTS**

*Areas of academic study in the fields of: H- humanities; S - social studies; P – biological sciences; T – technological sciences; M- medical, sport and health sciences; R – Agricultural, forestry and veterinary sciences; A – the arts

** stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes