

Polish name of the course:	Żywnienie roślin w systemie ekologicznym	ECTS	3
English name of the course:	Plant nutrition in organic system		
Name of study	Organic Agriculture and Food Production		

Language: English		Study level: I	
Study status: <input checked="" type="checkbox"/> full-time <input type="checkbox"/> part-time	Status of the course: <input type="checkbox"/> basic <input checked="" type="checkbox"/> professional	<input checked="" type="checkbox"/> obligatory <input type="checkbox"/> elective	Semester 3 <input checked="" type="checkbox"/> winter semester <input type="checkbox"/> spring semester
description applies from the academic year (year):		2019/2020	Catalog number : ROL-ER-1S-03Z-05

Coordinator of the course <sup>5</sup>	Dr hab. Tomasz Sosulski		
Teachers :	Prof. Peter von Fragstein, dr hab Tomasz Sosulski, mgr inż. Tomasz Niedziński		
Conducting unit:	Department of soil environment sciences		
Unit ordering classes :	Faculty of Agriculture and Biology		
Goals and description of the course:	<p>The aim of this course is to provide knowledge in the field of nutritional management of organic crop cultivation. Students should become familiar with basic knowledges (A) of plant nutrition, metabolic importance of plant nutrients, nutrient deficiency symptoms, (B) of on-farm and off-farm resources for the transformation and reuse of organic matter for the improvement of soil fertility and the maintenance of nutrient supply, (C) of cropping system approach for the continuity of nutrient fluxes and the avoidance of nutrient losses.</p> <ul style="list-style-type: none"> <li>● Introduction</li> <li>● Sources of plant nutrients</li> <li>● Nutrients and their roles in crop metabolism</li> <li>● Nutrient deficiencies</li> <li>● Animal-based resources, FYM, slurry, storage, composting</li> <li>● Off farm composting, external nutrient cycles</li> <li>● Mineral fertilizers</li> <li>● Organic fertilizers</li> <li>● Biofertilizers</li> <li>● Feeding capacities of plants</li> </ul> <p><b>Practicals:</b></p> <p>Topics of the laboratory training: (1). Determination of liming needs based on soil acidity; (2). Determination of available P forms in soil by Egner Riehm; (3). Determination of nitrogen in plant material; (4). Qualitative analysis of fertilizers allowed for use in organic farming; (5). Development of a fertilization plan for a selected organic farm (Working with databases for the elaboration of nutrient balances and the estimation of internal and external nutrient supply within different farming structures)</p>		
Didactic forms, number of hours :	W - lecture, hours 30 C - auditorium exercises, hours 30 LC - laboratory exercises, hours PC – design (project) exercises, hours TC - field exercises, hours ..... ZP - apprenticeships, hours .....		
Teaching methods :	Monographic lecture based on multimedia presentations, open discussion on selected topics		
Formal requirements and initial assumptions :	None		
Learning outcomes :	<b>Knowledge:</b> W_01 - Has basic knowledge about nutrient resources in organic cultivation W_02 - Has basic knowledge about plant nutrients and their importance and contribution for the development of biomass and crop quality W_03 - Has basic knowledge about recycling techniques for the transformation and reuse of organic matter, on-farm and off-farm	<b>Skills:</b> U_01 – Can elaborate nutrient balances in response to farming profile and rotational frames U_02 - Can develop a critical standpoint impacts of about fertilizing schemes	<b>Competence :</b> K_01 – Can develop fertilizing schemes for field production

The verification way of learning outcomes :	Effects: Written test (open and closed questions)		
Form of documentation achieved learning outcomes:	Effects W_01-W_03, U_01 , U_02 , K_01 - test sheet signed by the student		
Elements and weights with the impact on the final grade:	Knowledge test: 100%		
Place for course:	lecture room, laboratory		
Basic and complementary literature: Francis, C. (ed.) (2009) Organic farming: the ecological system. American Society of Agronomy. Agronomy Monograph 54, 353 p. (Selected chapters) Koepke, U. (ed.) (2019) Improving organic crop cultivation. Burleigh Dodds Science Publishing, BD Series in Agricultural Science No. 47, 548 p. (Selected chapters) Kristiansen, P., Taji, A. & Regeanold, J. (2006) Organic agriculture – a global perspective. CABI Publishing, Wallingford, 449 p. (Selected chapters) Bruulsema, T.W., Fixen, P.E. & Sulewski, G.D. (2016) 4R Plant nutrition Manual. International Plant Nutrition Instistute, Peachtree Corners.			
Comments			

Quantitative indicators characterizing the module / course:

Estimated total number of student work hours (contact and own work) necessary to achieve the expected learning outcomes – based on this, complete the ECTS field:	75
The total number of ECTS points that a student obtains in classes requiring direct participation of academic teachers or other persons conducting classes (consultations, cooperation with a supervisor):	ECTS 1,5

Table of compliance of the directional learning outcomes with the effects of the course:

effect category	Learning outcomes for the course:	Reference to effects for the study program for the field of study	The impact of the course on the field effect <sup>*)</sup>
Knowledge	W_01 - Has basic knowledge about nutrient resources in organic cultivation	K_W02, K_W10	2, 2
	W_02 - Has basic knowledge about plant nutrients and their importance and contribution for the development of biomass and crop quality	K_W05, K_W15	2,2
	W_03 - Has basic knowledge about recycling techniques for the transformation and reuse of organic matter, on-farm and off-farm	K_W008	2
Skills	U_01 – Can elaborate nutrient balances in response to farming profile and rotational frames	K_U14, K_U16	1
	U_02 - Can develop a critical standpoint impacts of about fertilizing scheme	K_U13	2
Competence	K_01 – Can develop fertilizing schemes for field production	K-S04	1

\*)

3 - advanced and detailed,

2 - significant,

1 - basic,