

## SYLLABUS (MODULE-ERASMUS+)

Course/module (as specified in the approved curriculum for the field of study) <b>Sustainable vegetable crop production - field</b>		ECTS		Catalogue number	
Name in Polish <b>Zrównoważona produkcja warzyw polowych</b>		<b>4</b>		<b>HORT 5.1</b>	
Head of course/module <b>Dr hab. Barbara Frąszczak</b>					
Unit(-s) providing the course/module (Institute/Department) <b>Department of Vegetable Crops</b>					
Field of study <b>Horticulture</b>		Level		Profile <b>Academic-general</b>	
				<b>winter</b>	
<b>TYPE OF CLASSES/LECTURES AND THE NUMBER OF HOURS</b> (organised classes/lectures and self-study)					
Type of studies: full-time			Type of studies: extramural		
- lectures	20	- lectures			X
- laboratory practical	10	- classes			X
- project based practical	5	-			
- Field exercise	10	-			
- Other – tutored		-			
- self-study	55	- self-study			
Total number of hours:		100	Total number of hours:		X
<b>OBJECTIVE OF COURSE/MODULE</b>					
Gaining basic knowledge of sustainable vegetable crop production in field. Knowledge of methods of integrated and organic horticultural production.					
<b>TEACHING METHODS</b>					
Lectures supported by multimedia presentation practicals – laboratory, demonstrations and field trips, exercises, discussion					
<b>LEARNING OUTCOMES</b>				Reference to field outcomes	
				Reference to area outcomes	
Knowledge	E1 - Demonstrates knowledge of advanced methods, techniques and mechanisms to exploit and shape the potential of nature to improve the quality of human life; E2 - Has an expanded understanding of the role and importance of the natural environment, the sustainable use of natural resources, their threats and their protection; E3 - Has in-depth knowledge of abiotic factors and biotic plant growth and development and their control; E4 - Has in-depth knowledge of integrated and ecological horticultural production.			<i>Not applicable</i>	
Skills	E5 - Finds, analyzes and creatively uses the information needed from various sources in the field of gardening; E6 - Alone and comprehensively identifies and analyzes phenomena affecting the state of the farming environment, can adapt them to the needs of plants; E7 - Has an in-depth ability to identify and analyze and use phenomena that determine plant health.				
Social competences	E8 - Has knowledge of activities leading to sustainable gardening development; E9 - Is aware of the importance of social, professional and ethical responsibility for the quality of horticultural production; E10 - Has knowledge of actions to reduce risks and anticipate the effects of horticultural production on the environment.				

<b>Methods to verify learning outcomes</b> Written test Project making Evaluation of the discussion on the results of laboratory exercises Written exam	Outcome Reference Numbers E1 – E10
<b>TEACHING CONTENT</b>	
<p><b>Lectures</b>  Sustainable horticulture – definitions and terms. Role of vegetable grafting in horticultural production. Conventional food versus organic food. Growing methods and substrates in field vegetable cultivation. Irrigation and fertigation in field production. Integrated vegetables and organic vegetables production systems. Pest and disease control in IVP and Organic Vegetables Production systems. Directions in disease resistance breeding and pesticide application techniques. Managing environmental risk in sustainable vegetable production.</p> <p><b>Practicals</b>  Sensory analysis of processed, canned vegetables. The problem of the accumulation of nitrates, heavy metals and other toxic substances in vegetables and fruits. Tomato and cucumber grafting. Organic waste materials used in vegetable production.</p> <p><b>Field exercises:</b> Trip to ecofarm and to modern greenhouse.</p>	
<b>Forms and criteria for passing of course/module</b> Written test Written exam Project evaluation and completion Evaluation of the discussion on the results of laboratory exercises	Percentage of final mark 25% 50% 15% 10%
<b>LIST OF LITERATURE</b>	
<p><b>Basic literature</b>  Acta Hort. 1086. 2015. I International Symposium of Vegetable Grafting.  Congress-IHC2006: International Symposium on Sustainability through Integrated and Organic 767: 295-308.  Gullan P.J. and Cranston P.S. 1999. The Insects. An Outline of Entomology. Blackwell Science Ltd. University of California, Davis, USA.  Harvesting the Sun – A Profile of World Horticulture. 2012. Scripta Horticulturae 14. Published by International Society for Horticultural Science.  Juroszek P., Lumpkin T.A., Palada M.C. 2008. Sustainable Vegetable Production Systems. Acta Hort. 767: 133-149.  Kubota C. and McClure M.A. 2008. Vegetable Grafting: History, Use, and Current Technology Status in North America. HortScience 43(6): 1664-1669.  Lal R. 2008. Sustainable Horticulture and Resource Management. Acta Hort. 767: 19-42.  Lee J.M., Kubota C., Tsao S.J., Bie Z., Hoyos Echevarria P., Morra L., Oda M. 2010. Current status of vegetable grafting: Diffusion, grafting techniques, automation. Scientia Horticulture 127(2): 93-105.  Rubatzky V.E., Yamaguchi M. 1997. World Vegetables. Principles, Production, and Nutritive Values. Springer US  Sai Platform. 2013. Principles and Practices for Sustainable Fruit Production.  Snowdown A.L. 1991. A colour atlas of post-harvest diseases and disorders of fruit and vegetables. vol 2: Vegetables. Scientific Wolfe Ltd, Aylesbury, England.  The World of Organic Agriculture. Statistics &amp; Emerging Trends 2015. FiBL&amp;IFOAM.  Tilman D., Cassman K.G., Matson P.A., Naylor R., Polasky S. 2002. Agricultural sustainability and intensive production practices. Nature 418: 671-677.</p>	