

SYLLABUS (MODULE-ERASMUS+)

Course/module (as specified in the approved curriculum for the field of study) Advanced designing and applying irrigation and fertigation systems for vegetable crops		ECTS 5	Catalogue number HORT 8.3
Name in Polish Podstawy projektowania i zastosowania systemów nawadniania i fertygacji w uprawie warzyw			
Head of course/module Dr ing. Włodzimierz Krzesiński			
Unit(-s) providing the course/module (Institute/Department) Department of Vegetable Crops			
Field of study Horticulture	Level	Profile General academic	Semester summer
TYPE OF CLASSES/LECTURES AND THE NUMBER OF HOURS (organised classes/lectures and self-study)			
Type of studies: full-time		Type of studies: extramural	
- lectures	10	- lectures	
		- classes	
- laboratory practical	15	-	
- project based practical	15	-	
- Other – tutored	5	-	
- self-study	80	- Self-study	
Total number of hours:		125	Total number of hours:
OBJECTIVE OF COURSE/MODULE			
Expanding knowledge on designing and applying irrigation and fertigation systems for vegetable crops			
TEACHING METHODS			
Lecture supported by multimedia presentation, exercises, calculations, discussion, presentation of case studies by students			
LEARNING OUTCOMES		Reference to field outcomes	Reference to area outcomes
Knowledge	E1 - Student has advanced knowledge in the design of irrigation and fertigation systems;	<i>Not applicable</i>	<i>Not applicable</i>
	E2 – Student has advanced knowledge in constructing irrigation system in the field and greenhouse production;		
Skills	E3 - The student carries out advanced irrigation and fertigation projects under the supervisor;		
	E4 - Student has the ability to undertake activities solving problems of designing irrigation systems using information technology;		
Social competences	E5 - Student is able to correctly identifies and resolves dilemmas related to irrigation systems;		
	E6 - The student is able to actions aimed at limiting the risk and anticipating the effects of irrigation and fertigation systems on the state of the environment;		
Methods to verify learning outcomes		Outcome Reference Numbers	
Test		E1, E2, E3, E4, E5, E6	
Evaluation of project, protocol and discussions on exercises		E1, E2, E3, E4, E5, E6	

TEACHING CONTENT

Content of lectures: advanced design of irrigation and fertigation system, rules of designing complex systems, different methods of calculations, nuzzles and sprinklers for big areas, advanced irrigation system components automatization, drawings, AutoCAD, examples of irrigation system

Content of exercises: Advanced calculation: water flow, pressure drop, pipe diameter water amount, advanced design of irrigation and fertigation system, advanced technical drawing, AutoCAD, advanced design of selected areas

Project: Design of irrigation system

Forms and criteria for passing of course/module	Percentage of final mark
Lectures and exercises - written tests- passed from 51%	80%
Project - completion	20%

LIST OF LITERATURE

Basic literature

Hunter 2016. Irrigation System Design. www.hunterindustries.com

Hunter 2016. Decoder Systems. Design Guide. www.hunterindustries.com

Rain Bird. 2016. Landscape Irrigation Design Manual. www.rainbird.com