

Course Unit Descriptor

Study Programme: Agronomy			
Course Unit Title: Technologies of vegetable production			
Course Unit Code: 19.AGR087			
Name of Lecturer(s): Žarko Ilin			
Type and Level of Studies: Doctoral academic studies			
Course Status (compulsory/elective): Elective			
Semester (winter/summer): Summer			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): Face-to-face/distance learning			
Number of ECTS Allocated: 10			
Prerequisites: None			
<p>Course Aims: The aim of the course: is to acquaint the student with the theoretical foundations and practical knowledge related to the latest technologies of vegetable production in different cultivation systems in the open field and in a protected area. Furthermore, the goal is to acquaint students with the latest trends in scientific research work in the field of horticulture.</p>			
<p>Learning Outcomes: Knowledge: a doctoral student should acquire knowledge related to the most diverse systems of vegetable production (controlled conventional, integral, organic, biological, ecological, biodynamic, alternative...) in the open field and in a protected area. Evident climate changes at the global and regional level require the development of new technologies that will contribute to the partial and/or complete elimination of abiotic stress that can cause extremely high or low temperatures, drought, salinity, excessive soil moisture, improper nutrition. Accordingly, it is important to choose tolerant species and varieties of vegetables to abiotic stress, development and application of biotechnology (grafting) in the production of vegetable seedlings, shading as well as measures to combat the pronounced amount of radiation and drought. Skills: a doctoral student should collect relevant literature and master the methodology of setting up and performing field and laboratory experiments, to be able to independently create and manage the development of projects.</p>			
<p>Syllabus: <i>Theory:</i> The emphasis is on modern and sustainable vegetable production, development and introduction of new growing technologies. In order to increase the competitiveness of domestic production, doctoral students will be trained to contribute to the sustainability of vegetable production through research results. Emphasis will be placed on the selection and testing of new, more productive varieties and hybrids of vegetables. Then, the creation and selection of lines and substrates for grafting vegetable seedlings. The development and mass application of biotechnology and grafting will significantly contribute to the health safety of produced vegetables. Students will be trained for tests with the application or mass use of a wide variety of organic fertilizers, fertigation techniques and the development and application of hydroponic vegetable growing systems in the open field and in a protected area. These tests should contribute to the rational consumption of expensive mineral fertilizers. Reducing the use of nitrogen from mineral fertilizers is a function of saving energy and protecting the environment. Soil fertilization (mulching) significantly affects the mineralization of organic matter, the water regime and the provision of plants with easily accessible water. Direct covering of plants with agrotexile provides protection from low and high temperatures, hail, but also physical protection from harmful insects and pathogens. Doctoral students will be involved in testing the impact of new growing technologies on physiological, biochemical processes, biological value and quality of vegetables. <i>Practice:</i> Training of students in collecting literature, properly setting up experiments in an open field and in a protected area with the implementation of regular measures of care and protection against disease-causing agents, pests and weeds in various systems of conducting experiments.</p>			
Required Reading:			
Howard M.R. (2004): Hydroponic food production. Newconcept Pres, Inc., Mahwah, New Jersey. Printend in the United States of America.			
Ilin Ž., Adamović B., Ilin Sonja, Žnidarčič D. (2017). Chapter in the leading international importance: Early potato, p. 389-401. Good Agricultural Practices for greenhouse vegetable production in the South East European countries, pp. 428. In: W Baudoin et al. (Ed). Food and Agriculture Organization of the United Nations (FAO), 230, Rom, 2017; ISBN 978-92-5-109622-2; ISSN 2070-2515 http://www.fao.org/3/a-i6787e.pdf			
Weekly Contact Hours: 8	Lectures: 3	Study research: 5	
Teaching Methods: Teaching is multimedia and interactive.			
Knowledge Assessment (maximum of 100 points): 100			
Pre-exam obligations	points	Final exam	points

Active participation	class 5	written exam	
Practical work	20	oral exam	75
Preliminary exam(s)		
Seminar(s)			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.