Greenhouse phytoproducts

Nazwa kierunku studiów	Zielarstwo i Fitoprodukty
Nazwa modułu, także nazwa w języku angielskim	**Greenhouse phytoproducts** **Fitoprodukty z upraw szklarniowych**
Język wykładowy	English
Rodzaj modułu	optional
Poziom studiów	Bechelor's first degree
Forma studiów	nonstacionary
Rok studiów dla kierunku	III
Semestr dla kierunku	6
Liczba punktów ECTS z podziałem na kontaktowe/niekontaktowe	4 (1,4/2,6)
Tytuł naukowy/stopień naukowy, imię i nazwisko osoby odpowiedzialnej za moduł	dr hab. Andrzej Sałata, prof. uczelni
Jednostka oferująca moduł	Department of Vegetable and Herb Crops
Cel modułu	Acquainting students with irrigation system: surface, furrow, sprinkler and drip irrigation. Technology and characteristics of modern irrigation systems. Systems and technology irrigation used in orchard, nursery, vegetable and landscape. Acquainting with modern systems watering plants in greenhouse use and under plastic cover. The ability to mark the basic parameters of irrigation used for horticulture cultivation. Count of dates and doses of irrigation.
Efekty uczenia się dla modułu to opis zasobu wiedzy, umiejętności i kompetencji społecznych, które student osiągnie po zrealizowaniu zajęć.	Learning:
	1. He has extensive knowledge about the influence of microclimate factors on the yielding of macrofungi.
	2. Demonstrates knowledge of basic mushroom cultivation technologies at the level necessary to control the quality of fruiting bodies.
	3. Has basic knowledge about the problems and threats in mushroom cultivation.
	Skills:
	1. He can solve problems at various stages of growing different species of mushrooms.
	2. He knows how to optimize economic activities, techniques and technologies in the cultivation of macro mushrooms.
	3. He can independently determine the optimal microclimate conditions for the growth of mushroom fruiting bodies.
	Social competence:
	1. He is aware of professional and ethical responsibility for the quality of fruiting bodies and mushroom products.
	2. He is ready for self-improvement in the cultivation of macro mushroom.
Wymagania wstępne i dodatkowe	-

Treści programowe modułu	Lectures Soil water management: three-phase system soil, soil phase, minerals, organic matter, forms of water in the soil, forces binding water in the soil. Movement of water in the soil: infiltration, filtration, wet soil water capillary, water evaporation from the soil. Useful retention and soil water balance. Water management plant: downloading and water movement in plants, transpiration. Plant water requirement in the field water consumption. Critical period of plants in water management. Water balance of plants. Methods of irrigation: sprinkler and drip irrigation. Sprinkler irrigation system. Periods and irrigation doses of rain water. Technology and characteristics of irrigation system. Drip (trickle) irrigation: drip system layout. Technology and characteristics of drip irrigation system. A single doses of hydration. Drip irrigation used in herbs and vegetables crops. Critical periods in water management. Methods of calculation of water requirement Watering plants in the greenhouse and under plastic cover (mulching). Specific adaptations to irrigation system. Fertigation in the greenhouse and plastic tunnels. Irrigation water quality for container-grown plants. Aquaponics - modern technology a bio-integrated system aquaculture with hydroponics flower, vegetable and/or herb production. Classes Water availability in the soil. Practical used and interpretation of curve soil matric potential (pF). Calculation procedure for the crop evapotranspiration coefficient under standard and nonstandard conditions. Results interpretation. Practical use of specialist software for irrigation management. Total amount of water to irrigation. Single doses of irrigation. Technology of sprinkler irrigation system. Count of single doses of microirrigation. Automatic irrigation based on soil moisture for vegetable crops. Marking the available water content of peat, marking the covering pH - neutralization curve.
Wykaz literatury podstawowej i uzupełniającej	**Primary literature** 1. Allen R.G., Pereira L.S., Raes D., Smith M., Crop evapotranspiration. FAO Irrigation and Drainer Paper, No 56. 2. Jensen, M.E., Burman, R.D., and Allen, R.G. (ed). 1990. Evapotranspiration and Irrigation Water Requirements. ASCE Manuals and Reports on Engineering Practices No. 70., Am. Soc. Civil Engrs., New York, NY, 360 p. **Supplementary literature** 3. Burman, R. Pochop, L.O. 1994. Evaporation, Evapotranspiration and Climatic Data. Elsevier Science B.V., Amsterdam.
Planowane formy/działania/metody dydaktyczne	lectures using modern multimedia techniques, auditorium, laboratory and field exercises, joint design of laboratory experiments, discussion, consultations
Sposoby weryfikacji oraz formy dokumentowania osiągniętych efektów uczenia się	W1, W2, W3 – written report of problems, U1 – written report of problems, U2 – written report of test, U3 – evaluation of the presentation, K1 – assessment of speech and presentation. K2 – assessment of participation in the discussion and activity in class Forms of documentation - diary and archiving of works
Elementy i wagi mające wpływ na ocenę końcową	W1, W2, W3 = 40% U1, U2, U3 = 40% K1, K2 = 10%

Bilans punktów ECTS	Form of classes	Number of hours	Points ECTS
	Number of contact hours		
	Lectures	12	0.44
	Classes	15	0.60
	Computing tasks	5	0.16
	Consultion	1	0.04
	Exam	2	0.16
	Total of contact hours	**35**	**1.40**
	Number of non-contact hours		
	To prepare for the class	15	0.60
	To preparation for passing	15	0.60
	To prepare for the exam	10	0.40
	Individual completion of reports (worksheets)	10	0.40
	Studying recommended literature	15	0.60
	Total of non-contact hours	**65**	**2.60**
	Total/ points ECTS	**100**	**4.00**
Nakład pracy związany z zajęciami wymagającymi bezpośredniego udziału nauczyciela akademickiego	Lectures – 15 h Classes – 30 h Computing tasks 0,60 2 h Consultation – 1 h Exam – 2 h		
Odniesienie modułowych efektów uczenia się do kierunkowych efektów uczenia się	W1 – ZF_W01 W2 – ZF_W02 W3 – ZF_W03 U1 – ZF_U01 U2 – ZF_U03 U3 – ZF_U05 K1 – ZF_K01 K2 – ZF_K02		