

Karta opisu zajęć (sylabus)

Nazwa kierunku studiów	Zielarstwo i fitoprodukty
Nazwa modułu, także nazwa w języku angielskim	Micropropagation of rare domestic medicinal plants Mikrorozmnażanie rzadkich krajowych roślin leczniczych
Język wykładowy	Englisch
Rodzaj modułu	Optional
Poziom studiów	Master degree
Forma studiów	Part-time
Rok studiów dla kierunku	II
Semestr dla kierunku	3
Liczba punktów ECTS z podziałem na kontaktowe/niekontaktowe	6 (1,52/4,48)
Tytuł naukowy/stopień naukowy, imię i nazwisko osoby odpowiedzialnej za moduł	dr hab. inż. Marzena Parzymies, prof. uczelni
Jednostka oferująca moduł	Instytut Produkcji Ogrodniczej
Cel modułu	To acknowledge students with biotechnological methods of introducing rare and endangered species of medicinal plants into production and cultivation in vitro.
Efekty uczenia się dla modułu to opis zasobu wiedzy, umiejętności i kompetencji społecznych, które student osiągnie po zrealizowaniu zajęć.	Wiedza:
	1. The graduate knows and understands the possibilities and methods of micropropagation of endangered and rare species of medicinal plants that are present in natural sites and knows the possibilities of using the plant material obtained from in vitro cultures.
	2. The graduate knows and understands the issues of experiments and methods used in planning and optimizing the production of medicinal plants from natural sites in tissue cultures.
	3. The graduate knows and understands the issues related to running a tissue culture laboratory and production of protected or rare plant species with in vitro methods, in the legal and economic aspect.
	Umiejętności:
	1. The graduate is able to apply known techniques and methods of in vitro cultivation to plan and manage the process of the production of plant material derived from medicinal plants present in natural habitat.

	<p>2. The graduate is able to plan and conduct an experiment regarding the optimization of in vitro cultivation of medicinal plants, correctly draw conclusions based on the obtained results and observations, and data from scientific literature.</p>
	<p>Kompetencje społeczne:</p>
	<p>1. The graduate is ready to critically evaluate his/her knowledge and to understand its' importance in the field of production and cultivation of medicinal plants using in vitro methods.</p>
	<p>2. The graduate is ready for further education and self-improvement in the field of rare and endangered medicinal plants micropropagation.</p>
<p>Odniesienie modułowych efektów uczenia się do kierunkowych efektów uczenia się</p>	<p>Kod efektu modułowego – kod efektu kierunkowego W1 – ZF_W02 W2 – ZF_W06 W3 – ZF_W07, ZF_W08 U1 – ZF_U03 U2 – ZF_U02, ZF_U04 K1 – ZF_K01 K2 – ZF_K03</p>
<p>Odniesienie modułowych efektów uczenia się do efektów inżynierskich (jeżeli dotyczy)</p>	<p>Kod efektu modułowego – kod efektu inżynierskiego ZF_W02 – InżZF_W05 ZF_W04 – InżZF_W02 ZF_W06 – InżZF_W02 ZF_W07 – InżZF_W03 ZF_U01 – InżZF_U08 ZF_U02 – InżZF_U08 ZF_U04 – InżZF_U06</p>
<p>Wymagania wstępne i dodatkowe</p>	
<p>Treści programowe modułu</p>	<p>Lectures: Cultivation and propagation of medicinal plants in in vitro cultures, types of cultures and cultivation conditions, possibilities of using plants cultivated in vitro, advantages and disadvantages of plant production in tissue cultures, adaptation of in vitro cultivation to the habitat requirements of plant species, legal aspects of in vitro cultivation of endangered species, costs related to the cultivation of plants in in vitro cultures. Classes: initiation, stabilization, observation and characterization of the growth phases in selected types of medicinal plant cultures, determination of biomass and growth factor in the tested cultures, analysis of achievements in the field of methods of using medicinal plants occurring in natural positions in in vitro cultivation (case study), developing a project based on an independent, critical review of the current literature on the subject in order to develop a method for cultivating selected species of medicinal plants in in vitro cultures.</p>

Wykaz literatury podstawowej i uzupełniającej	<p>Literatura podstawowa:</p> <ol style="list-style-type: none"> 1. Biotechnology for medicinal plants, micropropagation and improvement. 2013, eds. Chandra, Suman, Lata, Varma, Ajit. Springer, Verlag. 2. Plant tissue culture: propagation, conservation and crop improvement. 2016. Anis, Mohammad, Ahmad, Naseem (eds.). Springer, Verlag. <p>Literatura uzupełniająca:</p> <ol style="list-style-type: none"> 3. Plant Tissue Culture, Techniques and Experiments. 2013. Smith R. Elsevier, Croydon. London. 4. Plant tissue culture. 2015. Sharma V., Alam A. I.K. International Publishing House Pvt. Ltd. New Delhi, India. <p>Monographs, scientific original articles on the micropropagation of medicinal plants and the acquisition of active compounds by biotechnological methods from the library databases of the University of Life Sciences in Lublin.</p>
Planowane formy/działania/metody dydaktyczne	Lecture with the use of multimedia methods and films, demonstration, auditorium and laboratory exercises, practical tasks related to the cultivation of a chosen endangered medicinal plant using in vitro methods.
Sposoby weryfikacji oraz formy dokumentowania osiągniętych efektów uczenia się	<p>W1, W2, W3, U1, U2, U3: Exam - written test on theory and practical skills and assessment of knowledge on techniques and materials.</p> <p>U1, U2: assessment of the practical task, the correctness of the work done.</p> <p>U2: evaluation of the written task on in vitro cultivation of a selected species of an endangered medicinal plant.</p> <p>U1, U2, U3: assessment of partial, written credits.</p> <p>K1, K2: assessment of the student's work and commitment during classes, including attendance, activity, independence and reliability during practical classes, preparation for classes.</p>
Elementy i wagi mające wpływ na ocenę końcową	<p>The final grade results from the weighted average obtained from the following elements:</p> <p>Exam - 50%</p> <p>Practice during class - 50%, which consists of:</p> <p>Evaluation of practical work - 30%</p> <p>Written task - 30%</p> <p>Grade from credits - 30%</p> <p>Evaluation of the student's individual and team work - 10%</p> <p>Based on the average, the following final grades are awarded:</p> <p>4,75-5,0 very good (5)</p>

	4,25-4,74 fairly good (4+) 3,75- 4,34 good (4) 3,25 – 3,74 satisfactory plus (3+) 3,0-3,24 satisfactory (3) < 3,0 unsatisfactory (2) To pass the course, both the exam grade and the tutorial grade must be positive.		
Bilans punktów ECTS	Form of classes	No. of hours	ECTS points
		Contact	
	Lecture	14	1,20
	Classes	14	1,20
	Consultations	2	0,08
	Laboratory work	6	0,48
	Exam	2	0,08
		Contactless	
	Self-preparation for classes	24	0,96
	Self-preparation for exam	24	0,96
	Homework	6	0,24
	Data reading	24	0,96
	Written task	24	0,96
Observations	10	0,40	
Total	150	6,0	
Nakład pracy związany z zajęciami wymagającymi bezpośredniego udziału nauczyciela akademickiego	- Participation in lectures – 14 hours - Participation in classes – 14 hours - Consultations – 2 hours - Laboratory works – 6 hours - Exam – 2 hours.		