A COURSE SYLLABUS – DOCTORAL SCHOOL

REGARDING THE QUALIFICATION CYCLE FROM 2022 TO 2026

GENERAL INFORMATION ABOUT COURSE	
Course title	Agrotechnics of herbal crops
Name of the unit running the course	**Doctoral school in University of Rzeszów**
Type of course *(obligatory, optional)*	obligatory
Year and semester of studies	I ; semester II
Discipline	agriculture and horticulture
Language of Course	polish language
Name of Course coordinator	dr hab. inż. Natalia Matłok, prof.. UR.
Name of Course lecturer	dr hab. inż. Natalia Matłok, prof.. UR.
Prerequisites	Basic knowledge of plant physiology, Basic knowledge of plant physiology, agricultural technology and agricultural chemistry

BRIEF DESCRIPTION OF COURSE
(100-200 words)

The aim of the course "Agrotechnics of herbal crops" is primarily to familiarize students with agrotechnical methods that provide high-quality plant material products. The lectures content presents the actual knowledge on the cultivation of herbal plants, factors and agrotechnical techniques that modified quality of special herbal materials. In addition, as part of the course, the student will acquire knowledge and skills regarding the method of increasing shelf life of herbal plants.

COURSE LEARNING OUTCOMES AND METHODS OF EVALUATING LEARNING OUTCOMES

Learning outcome	The description of the learning outcome defined for the course	Relation to the degree programme outcomes (symbol)	Learning Format (Lectures, classes,...)	Method of assessment of learning outcomes (e.g. test, oral exam, written exam, project,...)
Knowledge (no.)	**(Knows and understands)**			
1	The importance of the impact of agrotechnical treatments in the cultivation of herbal plants on the reduction of threats generated by the development of modern civilization	P8S_WK1	Seminar/ classes	oral exam, written exam,
2	Issues of agricultural technology development in the light of existing paradigms taken from contemporary literature	P8S_WG1	Seminar/ classes	oral exam, written exam,
3	The latest agrotechnical and technical solutions in the production of herbal raw materials with increased health benefits	P8S_WG2	Seminar/ classes	oral exam, written exam,
4	Professional terminology used in the description of agrotechnical treatments in the cultivation of herbs.	P8S_WG3	Seminar/ classes	oral exam, written exam,
Skills (no.)	**(Able to)**			

1	Define the purpose and subject of scientific research related to the agrotechnics of herbal plant cultivation, formulate a research hypothesis, develop research methods, techniques and tools and apply them creatively, draw conclusions based on scientific research.	P8S_UW1	Seminar/ classes	oral exam, written exam,
2	Search for and skillfully use the latest scientific literature to identify and solve research problems related to agricultural technology and conservation of selected herbal raw materials.	P8S_UW2	Seminar/ classes	oral exam, written exam,
3	Make a critical analysis and evaluation of the results of scientific research in the field of cultivation and agricultural technology of selected species of herbal plants.	P8S_UW3	Seminar/ classes	oral exam, written exam,
4	Lead scientific discussion in an international environment	P8S_U6	Seminar/ classes	oral exam, written exam,
Social competence (no.)	**(Ready to)**			
1	Recognize the importance of knowledge in solving cognitive and practical problems	P8S_KK3	Seminar/ classes	oral exam, written exam,

LEARNING FORMAT – NUMBER OF HOURS

Semester (no.)	Lectures	Seminars	Lab classes	Internships	others	ECTS
II	-	15	—	—	—	2

METHODS OF INSTRUCTION

Seminar.
Laboratory classes.

COURSE CONTENT

1. Systematics of herbal plants.
2. Soil and environmental requirements of selected herb species.
3. innovative agrotechnical treatments in the cultivation of selected species of herbal plants.
4. Factors modifying the quality of the herbal raw material produced.
5. Methods of conservation and storage of herbal raw materials.

COURSE ASSESSMENT CRITERIA

Written exam with open and closed questions. A condition of passing is to give a minimum of 50% correct answers. Punctation: 51-60% (3,0); 61-70% (3,5); 71-80% (4,0); 81-90% (4,5); 91-100% (5,0).

TOTAL PhD STUDENT WORKLOAD REQUIRED TO ACHIEVE THE INTENDED LEARNING OUTCOMES
– NUMBER OF HOURS AND ECTS CREDITS

Activity	Number of hours
Scheduled course contact hours	15
Other contact hours involving the teacher (consultation hours, examinations)	1
Non-contact hours – student`s own work (preparation for classes or examinations, project, etc.)	5
Total number of hours	20
Total number of ECTS credits	2

INSTRUCTIONAL MATERIALS	
Compulsory literature:	**JADWIGA ANDRZEJEWSKA, ELŻBIETA PISULEWSKA. UPRAWA ROŚLIN ZIELARSKICH, 2019, WYD. UNIWERSYTET TECHNOLOGICZNO-PRZYRODNICZY W BYDGOSZCZY, ISBN: 978-83-65603-92-0**
Complementary literature:	Kudełka W, Kosowska A., Składniki przypraw i ziół przyprawowych determinujące ich funkcjonalne właściwości oraz ich rola w żywieniu człowieka i zapobieganiu chorobom, Zeszyty Naukowe nr 781 Uniwersytetu Ekonomicznego w Krakowie, 2008, ss. 83-111; Matłok, N.; Piechowiak, T.; Zardzewiały, M.; Gorzelany, J.; Balawejder, M. Effects of Ozone Treatment on Microbial Status and the Contents of Selected Bioactive Compounds in Origanum majorana L. Plants. Plants 2020, 9, 1637. https://doi.org/10.3390/plants9121637; Matlok, N.; Piechowiak, T.; Gorzelany, J.; Zardzewiały, M.; Balawejder, M. Effect of Ozone Fumigation on Physiological Processes and Bioactive Compounds of Red-Veined Sorrel (Rumex sanguineus ssp. sanguineus). Agronomy 2020, 10, 1726. https://doi.org/10.3390/agronomy10111726; Matłok, N.; Stępień, A.E.; Gorzelany, J.; Wojnarowska-Nowak, R.; Balawejder, M. Effects of Organic and Mineral Fertilization on Yield and Selected Quality Parameters for Dried Herbs of Two Varieties of Oregano (*Origanum vulgare* L.). *Appl. Sci.* **2020**, *10*, 5503. https://doi.org/10.3390/app10165503 Stępień, A.E., Gorzelany, J., Matłok, N. et al. The effect of drying methods on the energy consumption, bioactive potential and colour of dried leaves of Pink Rock Rose (Cistus creticus). J Food Sci Technol 56, 2386–2394 (2019). https://doi.org/10.1007/s13197-019-03656-2

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Date and signature of the Course lecturer

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Approved by the Head of the Department or an authorised person