



INSTITUTE OF DENDROLOGY

POLISH ACADEMY OF SCIENCES

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Informacje ogólne/ General information	Nazwa przedmiotu/ Name of the subject	Ekologia roślin drzewiastych/ Ecology of woody plants
	Jednostka prowadząca/Unit offering the subject	Instytut Dendrologii Polskiej Akademii Nauk Institute of Dendrology, Polish Academy of Sciences
	Język przedmiotu/Language of the subject	Język angielski/ English
	Limit miejsca w grupach/Limit of the places in groups	
	Terminy zajęć/Time of classes	08.11, 15.11, 22.11, 29.11, 06.12 and 13.12
Information about the subject	Typ przedmiotu/Type of the subject	Obowiązkowy/ obligatory
	Imię i nazwisko koordynatora przedmiotu/Person coordinating the subject	dr hab. Tomasz Leski, prof. ID PAN
	Imię i nazwisko osób prowadzących/First and last names of people conducting the subject	Pracownicy naukowcy Instytutu Dendrologii PAN/ Academics of Institute of Dendrology PAS
	Imię i nazwisko osób egzaminujących/First and last name of the examiner or the creditor	Pracownicy naukowcy Instytutu Dendrologii PAN/ Academics of Institute of Dendrology PAS; osoba zaliczająca/ credits: dr hab. Tomasz leski, prof. ID PAN
	Sposób realizacji/ Implementation method	Wykład z wykorzystaniem środków audiowizualnych poprzez MS TEAMS/ Lecture with the use of audiovisual means via MS TEAMS
	Wymagania dodatkowe/ Additional Requirements	wiedza z zakresu podstaw biologii, fizjologii i biochemii roślin, genetyki roślin, biologii molekularnej, ekologii,/ knowledge of the basics biology, plant physiology and biochemistry, plant genetics, molecular biology, ecology,
	Liczba punktów ECTS/Number of ECTS* credits	4 ECTS
	Metody dydaktyczne/ Didactic methods used	Wykład z prezentacją multimedialną. Metoda studium przypadku. Dyskusja dydaktyczna, student: praca własna z literatury/ Lecture

	<p>Zakres tematów/ Scope of topics</p>	<p>with multimedia presentation. Case study method. Didactic discussion, student: own work with the literature</p> <p>Trees bud dormancy - benefits and threats under climate changes; Mechanism of seed survival in the natural environment and under stress condition; Seed dormancy, germination and seedling establishment; Seed quality - how to measure it?</p> <p>The sex life of woody plants; Polluted environments and their phytoremediation by woody plants; Forest liter- it matters;</p> <p>Determinant and consequences of trees and shrub invasions;</p> <p>Plant insect interactions;</p> <p>Plant-fungi interaction; Mycorrhizal symbiosis – diversity and functions</p>
<p>Efekty kształcenia/ Learning outcomes</p>	<p>Efekty kształcenia dla przedmiotu ujęte w kategorii: wiedzy, umiejętności I kompetencji społecznych/ Learning outcomes for the subject included in the category of knowledge, skills and social competences</p>	<p><u>Knowledge</u></p> <p>P8S_WG_1. The student gains basic knowledge about the biology of tree seeds and buds, their structure, development, quality, and adaptive mechanisms that determine survival in stressful conditions (drought, cold, and frost stress), also considered in the context of climate change.</p> <p>P8S_WG_2 Is familiar with the processes of plant response to abiotic stresses with particular emphasis on plant tolerance to abiotic stresses and the role of mentioned factors in the phytoremediation process; is familiar with various phytoremediation processes and with indicators related to phytoremediation; is familiar with the processes that determine the litter development.</p> <p>P8S_WG_3. Has organized knowledge of tree invasion determinants and pathways and knows mechanisms facilitating tree invasions</p> <p>P8S_WG_4. Knows and interprets the phenomena and processes occurring in the life of insects and plants related to their reproduction, development, and growth, knows the types of dependencies that occur between plant and insects species.</p> <p>P8S_WG_5. Knows different types of plant-fungi interactions; is familiar with mycorrhizal diversity and factors shaping their community and pattern of global distribution of mycorrhizal types</p> <p>P8S_WK_2. The student can indicate the threats for forest litter and their consequences for ecosystem functioning.</p> <p>P8S_WK_3. Is familiar with consequences of biological invasions at various levels of life organization.</p>

		<p><u>Skills</u></p> <p>P8S_UW_1. Is able to present the structure and development of tree seeds and buds, knows the basic adaptation mechanisms to stressful conditions, understands the biological significance of the existence of buds and seeds and their proper development and quality, uses the appropriate terminology, knows the definitions and classification systems of dormancy, can characterize its various types, knows to justify the importance of dormancy as a complex adaptive mechanism deciding on the survival of an individual and species.</p> <p>P8S_UW_2. Is able to indicate theoretical phytoremediation solutions adapted to a given polluted environment; is able to indicate theoretical solutions that inhibit the litter degeneration/transformation</p> <p>P8S_UU_2. Is able to interpret the indicators related to the litter decomposition, and relate them to the features of decomposing material.</p> <p>P8S_UW_3. Is able to analyze factors determining tree invasions in forest ecosystems; can interpret context-dependent mechanisms of biological invasions.</p> <p>P8S_UU_3. Can predict the consequences of tree invasions for biodiversity and ecosystem functioning.</p> <p>P8S_UW_4, 5. Can use the literature in order to properly gather knowledge about the biology of species and relation to other organisms</p> <p>P8S_UW_5. Can give examples of environmental factors and explain their impact on the mycorrhizal symbiosis of trees and fungi</p> <p>P8S_UW_5. Define mycorrhizal symbiosis; can describe anatomical differences of the main types of mycorrhiza; can give some examples of hot-spots of ectomycorrhizal fungi</p> <p><u>Social competence</u></p> <p>P8S_KK Understands the need for constant updating of knowledge from recognized sources of scientific information on the adaptation of plants to environmental conditions, and is ready to verify knowledge from various sources.</p> <p>P8S_KR Is aware of diverse opinions and stakeholder views on challenges in ecology of woody plants and can communicate with them, knows and appreciates the rules of cultural discussion.</p> <p>P8S_KO Is aware of the most serious global environmental problems and its influence on ecomy and society is aware of the importance of adaptation of trees to changing climate and social, professional, and ethical responsibility for the shaping and condition of the natural environment.</p>
	<p>Metody sprawdzenia efektów kształcenia/</p>	<p>Assessment methods:</p>

	Assessment methods & criteria	- written exam- P8S_W and P8S_K - discussions and active participations in lectures P8S_U
Warunki zaliczenia i literatura/ Credit requirements and literature	Forma i warunki zaliczenia/ Form and conditions of completing the course	Written exam
	Literatura/ Literature	Uzupełniająca literatura zostanie podana podczas zajęć/ Supplementary literature will be provided during the class

Objaśnienie skrótów:

P8 – poziom PRK, **S** – charakterystyka typowa dla kwalifikacji uzyskanych w ramach szkolnictwa wyższego

W – wiedza (kategoria opisowa): **G** – głębia i zakres, **K** – kontekst

U – umiejętności (kategoria opisowa): **W** – wykorzystanie wiedzy, **K** – komunikowanie się, **O** – organizacja pracy, **U** – uczenie się

K – kompetencje społeczne (kategoria opisowa): **K** – krytyczna ocena, **O** – odpowiedzialność, **R** – rola zawodowa

Explanation of abbreviations:

P8 - PRK level, **S** - characteristics typical of higher education qualifications

W - knowledge (descriptive category): **G** - depth and range, **K** - context

U - skills (descriptive category): **W** - using knowledge, **K** - communicating, **O** - organising work, **U** - learning

K - social competence (descriptive category): **K** - critical appraisal, **O** - responsibility, **R** - professional role