Course title:	Invasions in forests - invaders from the world of plants, animals, and fungi
Course title in Polish:	Inwazje w lasach - najeźdzcy ze świata roślin, zwierzat i grzybów
Course for discipline:	Forestry

Semester:	3	**Status of course:**	faculty	**Language:**	english
Academic year:		**Catalog number:**			

Coordinator of course:	Katarzyna Marciszewska
Lecturer od course:	Dagny Krauze-Gryz, Katarzyna Marciszewska, Tomasz Mokrzycki, Andrzej Szczepkowski
Executing unit:	Institute of Forest Sciences
Ordering unit:	Doctoral School SGGW
Assumptions, goals and description of the course:	The aim of the subject is to show invasion as a result of the introduction or introduction of geographically alien species of plants, animals and fungi, as well as their ecological consequences for nature conservation and the economy, especially in the forest environment. The aim is to draw attention to the intensification of the introduction of invasive alien species in the second half of the 20th century, the role of humans in eliminating geographical and ecological barriers separating species, the global nature of invasions and the threats they pose to biodiversity. The classes will cover the following topics: 1) introduction, terminology and definitions (native species, alien species, invasive species, introduction - introduction and introduction, introduction and invasion - the so-called tens rule, Williamson and Fitter 1996), invasion and invasiveness, expansion and expansiveness, susceptibility to invasion, invasion mechanisms), 2) origin, impact and characteristics of invasive species: plants, vertebrates, insects and fungi, 3) scale and types of threats posed by invasions to forest biodiversity and their effects for forest management.
Didactic form, number of hours:	10 h. Lecture, field lecture
Teaching methods:	Problem lecture, discussion, field case study
Limit of people in the group:	16

Learning outcomes

KNOWLEDGE - the graduate knows and understands:	**SKILLS - the graduate is able to:**	**COMPETENCES - the graduate is ready to:**
To the extent enabling to revise the existing pradigms in the field/discipline - the world achievments, gathering theoretical background as well as general and selected detailed issues	Carry out critical assessment of the scientific research findings and expert activities and their contribution to the knowledge development in the field/discipline	Critically evaluate the achievments in the field/discipline represented
Major general development trends in the field/discipline		Recognise knowledge in solving cognitive and practical problems characteristic for the area of research (field/discipline) and in an interdisciplinary aspect
		Support the ethos of scientific circles and conduct independent research

The method of verification of learning outcomes:	Written examination
Form of documentation of achieved learning outcomes:	Name list of attendance and activity during classes with final grades
Elements and weights of the final grade:	Preparation for classes and activity during classes (20%), the grade for the written examination (80%)
Place of the course:	lecture hall, WULS-SGGW Park in Ursynów, nature reserve Skarpa Ursynowska

Basic and supplementary literature

LITERATURA PODSTAWOWA.

Desprez-Loustau M-L. 2009. Alien fungi of Europe. W: DAISIE Handbook of alien species in Europe. Springer.
Desprez-Loustau M-L., Robin C., Buée M., Courtecuisse R., Garbaye J., Suffert F., Sache I., Rizzo D.M. 2007. The fungal dimension of biological invasions. Trends in Ecology and Evolution 22 (9): 472-480.
Głowaciński Z., Okarma H., Pawłowski J., Solarz W. (red). 2011. Gatunki obce w faunie Polski. Instytut Ochrony Przyrody PAN, Kraków 2011. Kirkendall LR, Faccoli M (2010) Bark beetles and pinhole borers (Curculionidae, Scolytinae, Platypodinae)
alien to Europe. In: Cognato AI, Knížek M (Eds) Sixty years of discovering scolytine and platypodine diversity: A tribute
to Stephen L. Wood. ZooKeys 56 : 227 – 251 . doi: 10.3897/zookeys.56.529
Lista inwazyjnych gatunków obcych zwierząt, Generalna Dyrekcja Ochrony Środowiska (gdos.gov.pl)http://projekty.gdos.gov.pl/igo-lista-inwazyjnych-gatunkow-obcych-zwierzat.
Richardson D. M., Pyšek P.,Rejmánek M.,Barbour M.G., Panetta D., West C.J. 2001. Naturalization and invasion of alien plants: concepts and definitions. Diversity and Distribution. https://doi.org/10.1046/j.1472-4642.2000.00083.
Tokarska-Guzik B, Dajdok Z., Zając M., Zając A., Urbisz A., Danielewicz W., Hołdyński Cz. 2012. Rośliny obcego pochodzenia w Polsce ze szczególnym uwzględnieniem gatunków inwazyjnych. GDOŚ http://www.gdos.gov.pl/files/artykuly/5050/Rosliny_obcego_pochodzenia_w_PL_poprawione.pdf.
Wojewoda W., Karasiński D. 2010. Invasive macrofungi Ascomycota and Basidiomycota in Poland. W: Mirek Z. (red.). Biological Invasions in Poland 1. W. Szafer Institute of Botany, Polish Academy of Sciences: 7-21.

LITERATURA UZUPEŁNIAJĄCA.

Jasińska K. 2020. Gatunki obce zwierząt w lasach polskich. Biblioteczka Leśniczego nr 402. Wydawnictwo Świat, Warszawa.
Krauze D., Gryz J. 2012. Wiewiórka szara (Sciurus carolinensis) w Polsce: science fiction czy realne zagrożenie? Studia i Materiały CEPL 33: 327-334. Marciszewska K., Szczepkowski A., Otręba A., Oktaba L., Kondras M., Zaniewski P., Ciurzycki W., Wojtan R. 2018. The dynamics of sprouts generation and colonization by macrofungi of black cherry Prunus serotina Ehrh. eliminated mechanically in the Kampinos National Park. Folia Forest. Pol. Ser. A Vol. 60 (1), 34–51. DOI:10.2478/ffp-2018-0004.
Marciszewska K., Szczepkowski A., Otręba A. 2020. Black cherry (Prunus serotina Ehrh.) colonization by macrofungi in the fourth season of its decline due to different control measures in the Kampinos National Park. Folia Forestalia Polonica, Series A – Forestry, 2020, Vol. 62 (2), 78–87. DOI: 10.2478/ffp-2020-0009.
Mokrzycki T. 2016. Obce gatunki korników (Coleoptera, Curculionidae, Scolytinae) w faunie Polski i potencjalne zagrożenia dla drzewostanów. Studia i Materiały CEPL w Rogowie 18,46(1): 105-111.
Szczepkowski A., Obidziński A. 2012. Obce gatunki sromotnikowatych Phallaceae w lasach Polski. Studia i Materiały CEPL, 14, 33 (4); 279-295. http://cepl.sggw.pl/sim/pdf/sim33_pdf/sim33_Szczepkowski_Obidzinski.pdf.

Comments:	

Estimated number of hours of work of the doctoral student necessary to achieve the assumed learning outcomes:	30

Leraning outcomes reference to the second degree characteristics of the National Qualification Framework (level 8) covering doctoral competences:		
Symbol:	**Learning outcomes:**	**8 level NQF**
SD1_KW01	To the extent enabling to revise the existing pradigms in the field/discipline - the world achievments, gathering theoretical background as well as general and selected detailed issues	P8S_WG
SD1_KW02	Major general development trends in the field/discipline	P8S_WG
SD1_KU05	Carry out critical assessment of the scientific research findings and expert activities and their contribution to the knowledge development in the field/discipline	P8S_UW
SD1_KK01	Critically evaluate the achievments in the field/discipline represented	P8S_KK
SD1_KK03	Recognise knowledge in solving cognitive and practical problems characteristic for the area of research (field/discipline) and in an interdisciplinary aspect	P8S_KK
SD1_KK08	Support the ethos of scientific circles and conduct independent research	P8S_KR