Course title:	Molecular aspects of plant - virus interactions
Course title in Polish:	Molekularne aspekty interakcji roślina - wirus
Course for discipline:	Agriculture and Horticulture/Biological Sciences

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

Coordinator of course:	dr Edmund Kozieł
Lecturer od course:	dr Edmund Kozieł (PhD); dr hab. Katarzyna Otulak-Kozieł prof.SGGW
Executing unit:	Department of Botany, Institute of Biology SGGW
Ordering unit:	Doctoral School SGGW
Assumptions, goals and description of the course:	Assumption: PhD students want to extend their knowlage about multidyscyplinary meaning of plant pathogens and their impact to enviroment and crop production. The main aim of the course is to present PhD students the detail biology of the most important groups of plant viruses. The main task is to present current directions/advancements of virological research and the nature of complex of molecular plant-viral pathogen interactions. This course is intended to prepare doctoral students to understand the content of teaching in virology and plant biology, and in the future to facilitate professional work related to scientific research. Scope of course: • Genetic and physiological basis of systemic and induced immunity. Resistance genes and the "mechanism" of their action during plant-virus interactions. • Tobacco mosaic virus (TMV) as a model object for molecular research on plant-virus interactions. • Biology of the Potyvirus genus, i.e. an example of interaction with viruses having single-stranded RNA. • Plant-virus interaction in the context of the efficiency of short-distance and systemic transport. Proteins and factors of the virus and factors from the host plant. • Plant viruses with a multipartite genome, i.e. interactions with Bromo- and Tobra-virus
Didactic form, number of hours:	Lecture with use of interactive computer presentations, 10h (hours)
Teaching methods:	Student projects independently or in groups in the form of multimedia presentations prepared in consultation with the lecturers
Limit of people in the group:	30

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:	SD1_KW02, SD1_KU05, SD1_KK01 and SD1_KK03 - group project. The project is prepared in a form of multimedia presentation prepared based on available literature sources. Project is actively presented and delivered to other faculty participants and lecturers
Form of documentation of achieved learning outcomes:	Reports of group projects as multimedia presentations with evaluation in the form of electronic files
Elements and weights of the final grade:	Weights: 80% is the grade for the multimedia presentation given in the group forum (the presentation grade includes 60% substantive grade and 20% method of presentation) and 20% is the grade for attendance at classes
Place of the course:	Lectures and final presentations – classroom/hall

Basic and supplementary literature

1. Scientific articles and websites indicated by the lecturer
2. Roger Hull “Plant virology”. Elsevier, 2014
3. Dijkstra J., de Jager C.P., 1998.” Practical plant virology. Protocols and exercises”. Springer, Berlin, 1998

Comments:	other contact hours not included in the total (presentation consultations), number of hours: 8

Estimated number of hours of work of the doctoral student necessary to achieve the assumed learning outcomes:	20

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