Course title:	Essential oils, their properties and usable potential in the agricultural and horticultural practice
Course title in Polish:	Olejki eteryczne, ich właściwości i potencjał użytkowy w praktyce rolniczej i ogrodniczej
Course for discipline:	Agriculture and Horticulture

Semester:	7	**Status of course:**	faculty	**Language:**	english
Academic year:		**Catalog number:**			

Coordinator of course:	dr hab.Olga Kosakowska, prof.SGGW
Lecturer od course:	dr hab.Olga Kosakowska, prof.SGGW; dr hab.Katarzyna Bączek, prof.SGGW
Executing unit:	Department of Vegetable and Medicinal Plants
Ordering unit:	Doctoral School SGGW
Assumptions, goals and description of the course:	The aim of the subject is comprehensive characteristic of essential oils, in terms of their usage in the agricultural and horticultural practice. Lectures: Worldwide production of essential oils and their industrial potential, especially in the agricultural and horticultural sector. Location and physiological functions of essential oils in plant's tissues. Biosynthesis of terpenoids. Chemotypes. Essential oils extraction methods and their qualitative and quantitative analysis. Essential oils as biopesticides. Classes: Characteristic of aromatic plants, their raw materials and essentails oils. Posibilities of their aplication in agriculture and horticulture.
Didactic form, number of hours:	Lectures, 5 h; classes 5 h
Teaching methods:	presentation, discussion, project, consultations
Limit of people in the group:	15

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:	test (topics of lectures and classes)
Form of documentation of achieved learning outcomes:	personal evaluation sheet (test), submitted project
Elements and weights of the final grade:	The evaluation of the learning outcomes consists of: 1. Active participation in discussion 2. Evaluation of the project 3. Evaluation of the test. A maximum of 100 points can be obtained for each element.Weights of each element: 1 - 10 %, 2 - 20 %, 3 - 70 %. The final mark is the sum of the points obtained for each element taking into account its weighting. A minimum score of 51 % is required to pass.
Place of the course:	Teaching room; online classes possible

Basic and supplementary literature

1. Başer, K.H.C., Bouchbauer, G., 2009. Handbook of Essential Oils: Science, Technology and Applications. Chemical Rubber Company Press, London. 2. Wichtl, M. (ed.) 1994. Herbal drugs and phytopharmaceuticals: A Handbook for Practice on a Scientific Basis. Medpharm, Stuttgart.
3. Rohloff, J., 2004. Essential oil drugs – terpene composition of aromatic herbs. In: Production Practices and Quality Assessment of Food Crops, Dris R., Jain S.M. eds., vol 3: Quality Handling and Evaluation, Kluwer Academic Publishers, Netherlands, 73–128.
4. Figueiredo, A.C., Barroso, J.G., José, G., Pedro, L.G., Scheffer, J.J.C., 2008. Factors affecting secondary metabolite production in plants: volatile components and essential oils. Flavour. Frag J. 23, 213–226

Comments:	

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