Course title:	Chromatography
Course title in Polish:	Chromatografia
Course for discipline:	Agriculture and Horticulture

Semester:	6	**Status of course:**	faculty	**Language:**	english
Academic year:		**Catalog number:**			

Coordinator of course:	Dr. Jarosław Leon Przybył
Lecturer od course:	Dr. Jarosław Leon Przybył
Executing unit:	Institute of Horticultural Sciences, Department of Vegetable and Medicinal Plants
Ordering unit:	Doctoral School SGGW
Assumptions, goals and description of the course:	The acquisition of knowledge and skills on modern chromatographic methods used for qualitative and quantitative assessment of plant material quality. Thin-layer chromatography (TLC), high performance liquid chromatography (HPLC) with diode array detector [DAD], fluorescence detector [FLD] and scattered light detector (ELSD), gas chromatography (GC) with flame ionisation detector (FID) and mass analyser (MS) - construction of equipment, sample preparation, separation, processing and interpretation of results.
Didactic form, number of hours:	Lectures 5 hours, Practical exercises 5 hours
Teaching methods:	Lecture, laboratory exercises, experience, experiment, discussion, problem solving
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:	
Form of documentation of achieved learning outcomes:	Laboratory exercise reports, evaluation credit sheets
Elements and weights of the final grade:	Final assessment: The evaluation of the learning outcomes consists of: 1. reports on laboratory exercises, 2.evaluation credit sheets. A maximum of 100 points can be obtained for each element. Weights of each element: 1 - 50 %, 2 - 50 % The final grade 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, laboratory

Basic and supplementary literature

Basic literature:

1. Fanali S., Chankvetadze B., Haddad P.R., Poole C., Riekkola M.J. 2023. Liquid Chromatography. Fundamentals and Instrumentation. 3rd Edition. Elsevier
2. Turner D.C.,Schäfer M., Lancaster S., Janmohamed I., Gachanja A., Creasey J. 2019. Gas Chromatography-Mass Spectrometry: How Do I Get the Best Results?. The Royal Society of Chemistry
3. Snyder L.R., Kirkland J.J., Dolan J.W. 2010. Introduction to Modern Liquid Chromatography. John Wiley & Sons, Inc.

Supplementary literature:

1. Holčapek M, Byrdwell Wm. C. 2017. Handbook of Advanced Chromatography/Mass Spectrometry Techniques. Academic Press and AOCS Press
2. Bulska E. 2018. Metrology in Chemistry. Springer
3. Dong M. 2019. HPLC and UHPLC for Practicing Scientists. John Wiley & Sons, Inc.
4. Specialist websites
5. Manufacturers' and suppliers' materials

Comments:	

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

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