COURSE DESCRIPTION

Course code	Volume in ECTS credits	Institution	Faculty	Department
AGR8007	7	VDU, ŽŪA	Agronomy	Institute of Agroecosystems and Soil Science

Course title in Lithuanian

Herbologija

Course title in English

Weed Science

Study methods	Volume in ECTS credits
Lectures	2
Consultations	1
Practicums	1
Individual work	3

Short course annotation in Lithuanian (up to 500 characters)

Dalykas skirtas pirmųjų metų doktorantams. Dalyko tikslas - suteikti doktorantams piktžolių biologijos, ekologijos, jų kontrolės teorinių žinių ir gebėjimų jas panaudoti sprendžiant mokslines ir praktines pasėlių piktžolėtumo problemas. Dalyko studijų formos: paskaitos, pratybos, konsultacijos, pasirengimas kontroliniam darbui, individualiosios užduoties atlikimas, pasirengimas egzaminui.

Short course annotation in English (up to 500 characters)

The subject is delivered for the first year PhD students. The aim of the course is to provide PhD students with the knowledge on weed biology, weed ecology, weed control and with abilities to use them in solving research and practical weed population problems. The studies of the subject include lectures, practicums, consultations, preparation for intermediate test, completion of individual assignment, preparation for examination.

Relevance of the course

Crop weediness is important limiting factor in agricultural production. Studies of this subject help students to understand the relationship between different agricultural components and weeds what enables to plan and conduct integrated research. Deep knowledge of weed science also is important in investigation topics related with weed biology, weed ecology, weed control, etc.

Course aims

1. To develop knowledge and their application:
   - To know and be able to apply weed classification theoretical and practical aspects;
   - To know and be able to apply the principles of weed biology and ecology;
   - To know and be able to apply the theoretical principles of weed control.
2. To develop research abilities:
   - To be able to assess and choose the investigation methods of crop and soil weediness.
3. To develop special abilities:
   - To be able to analyse the morphological characteristics of weed seeds, seedlings and plants and identify them;
   - To be able to connect the assumptions of successful weed control with the theory of weed science;
   - To be able to assess weed control measures on their efficiency and ecological aspects.
4. To develop social abilities:
   - To be able to communicate with colleagues, the scientific community and the public providing innovations in weed science, develop creative activities.
5. To develop personal abilities:
   - To be able to develop and realize abilities of creativity and other personal competences.

Content (topics) and methods

Lectures

1. Introduction
2. Weed classifications
3. Weed evolution and genetics
4. Origin and dispersal of weeds
5. Weed biology
6. Weed ecology
7. Assumptions for successful weed control
8. Prevention and smothering weeds
9. Physical weed control
10. Mechanical weed control
11. Soil tillage and weedines: theoretical and practical aspects
12. Biological weed control
13. Chemical weed control
14. Weed control and social aspect

Practicals

1. Morphology and identification of weed seeds
2. Morphology and identification of weed seedlings
3. Morphology and identification of weed plants

Methods of learning

At the beginning of the subject studies assignment for individual work is provided to doctoral students. Discussions are organized according to the topic of assignment. The PhD student should prepare a scientific literature analysis and make a presentation on a selected topic. Students also can consult teacher by IT means.

Structure of cumulative score and value of its constituent parts

Types of students' independent work	*Weight score*	*Deadlines of assessment*
Intermediate test	0.1	8th week
Practicums	0.1	11-15th week
Individual assignment	0.1	10th week
Exam	0.7	17-20th week

Compulsory reference materials

No.	**Authors of publication, title, publishing house, year of publication.**
1.	Blum U. Plant-plant allelopathic interactions: phenolic acids, cover crops and weed emergence. – Springer, 2011.
2.	Booth B. D., Murphy S. D., Swanton C. J. Weed ecology in natural and agricultural systems. , UK ; Cambridge, 2003.
3.	Čiuberkis S., Vilkonis K. K. Piktžolės Lietuvos Agroekosistemose/Monorafija, 2013.
4.	Hakanson S. Weeds and Weed Management on Arable Land: an Ecological Aproach. U. K. CABI Publishing, 2003.
5.	Jodaugienė D., Raudonius S., Špokienė N. Piktžolių ekologija. - Akademija, 2008.
6.	Pilipavičius V. Piktžolių plitimo dėsningumai ir adaptyvumas abiotiniams veiksniams = Weed spreading regularity and adaptivity to abiotical factors : habilitacijos procedūrai teikiamų mokslo darbų apžvalga. Akademija, 2007.
7.	Radosevich S., R., Holt J.,S., Hoboken C., M., G. Ecology of weeds and invasive plants: relationship to agriculture and natural resource management, John Wiley & Sons, 2007.
8.	Zimdalh R.L. (editor) Integrated weed management for sustainable agriculture, Cambridge, UK : Burleigh Dodds Science Publishing, 2018
9.	Zimdalh R.L. Fundamentals of weed science, Academic Press inc, 2013.

Supplementary reference materials

No.	**Authors of publication, title, publishing house, year of publication.**
1.	Singh H., P., Batish D., R., Kohli R., K. Handbook of sustainable weed management, New York, N.Y. etc. : Food products press, 2006

2.	Sirvydas, P., A., Terminis piktžolių naikinimas [Elektroninis išteklius, ASU Elektroninė talpykla] : monografija, 2012.
3.	Špokienė N., Povilionienė E. Piktžolės.- Kaunas, 2003.- 195 p.
4.	Upadhyaya M. K., Blackshaw R. E. Non-chemical weed management: principles, concepts and technology. Wallingford : CABI, 2007.
5.	Weber E. Invasive plant species of the world: a reference guide to environmental weeds. Cambridge, 2003.
6.	Weed Research: Journal of the European Weed Research Society.
7.	Weed Technolopgy: Journal of the American Weed Research Society.
8.	Zimdahl, R. L. Weed-crop competition: a review. Oxford, UK, 2004.
9.	Zwerger P., Ammon H. U. Unkraut – Ökologie und Bekämpfung. Eugen Ulmer GmbH & Co, 2002.

Course programme designed by

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