

COURSE DESCRIPTION

Course code	Volume in ECTS credits	Institution	Faculty	Department
AGR8011	7		Agronomy	

Course title in Lithuanian

Augalų genetika

Course title in English

Plant genetics

Study methods	Volume in ECTS credits
Lectures	46
Consultations	
Exam	2
Individual work	139

Short course annotation in Lithuanian (up to 500 characters)

Doktorantai, įgis naujausias sistemingas augalų genetikos mokslinių pasiekimų žinias, apie požymių paveldėjimo principus bei genetinės informacijos perdavimo sistemas, genų evoliucijos dėsningumus, funkcinę genomo sandarą ir genų raišką, genetinį kintamumą ir stabilumą, tikslingo genetinės informacijos keitimo metodus ir jų panaudojimo būdus.

Short course annotation in English (up to 500 characters)

The students will acquire the new systematic knowledge of the scientific achievements on plant genetics, the principles of inheritance of features and systems of transmission of genetic information, gene evolution, genome structure and gene expression, methods of investigation of genetic variability and stability and ways of using them.

Relevance of the course

PhD students will be able to identify specific phenomena of plant heredity and variability, evaluate gene expression management, analyze and explain genetic variability and stability issues; to plan and carry out research, to introduce genetic methods in the fields of biotechnology and breeding of agricultural plants, to solve the problems of plant genetics, to convey scientific innovations of plant genetics and prospects for further development

Course aims

To increase the knowledge of PhD student in plant genetics, and the ability to critically evaluate the current situation of plant genetics, the possibilities of gene expression management, to analyze and solve problems of genetic variability and stability, to apply genetic methods in agricultural plant breeding programs.

Content (topics) and methods

Lectures:

1. First hypotheses about heredity. Genetics Science Begins.
2. Cell Structure and Sharing. Types of reproduction. Cell cycle.
3. Generational transfer of inheritance.
4. Gene interaction.
5. Chromosomal inheritance theory.
6. Remote hybridization.
7. Population genetics.
8. Structure of chromosomes and genes.
9. Non-nuclear inheritance.
10. Modifications and mutations.
11. Mutagenesis.
12. Protein biosynthesis and recombinant DNA production technology.

Methods of study: lecture, problematic, visualized teaching method, theoretical knowledge combined with discussions. In the absence of a minimum number of doctoral students for lectures individual consultations will be provided.

Structure of cumulative score and value of its constituent parts

1. Ability to plan and carry out fundamental and applied research on plants genetics.
2. Ability to analyze, summarize and critically evaluate information and formulate alternatives scientific problem-solving strategies.

Compulsory reference materials

No.	Authors of publication, title, publishing house, year of publication.
1.	Rančelis V. Genetika. Vilnius, 2000.- 662 p.
2.	Rančelis.V. Augalų genetika. Kaunas: Technologija. 2008.- 300 p.
3.	2. Acquaah G. Principles of Plant Genetics and Breeding. Oxford etc.: Blacwell publishing, 2007.-569 p.
4.	Babcock E. B. Genetics and plant breeding. Jodhpur : Agrobios, 2004. – 478 p.
5.	Howell S. H. Molecular genetics of plant development. 1998. - 384 p.
6.	Jackson J. F., Linskens H. F. Testing for Genetic Manipulation in Plants, 2002. - 194 p.
7.	Watson J. D. et all. Molecular Biology of the Gene. Singapure, 2004.- 681 p.
8.	Leister D. Plant functional genomics. Food Products Press. New York, London, Oxford. 2005. -
9.	677p. Генетика (под редакцией А.А.Жученко) Москва. Колос, 2003. – 479 с.

Supplementary reference materials

No.	Authors of publication, title, publishing house, year of publication.
1.	Atherton K. Genetically Modified Crops. Taylor & Francis Ltd, 2002.- 272 p.
2.	Jeffrey C., et all. Advances in genetics. Volume 62. San Diego, CA: Elsevier/Akademic Press, 2008.- 250 p.
3.	Snustad D. P., Simmons M. J., Jenkins J. B. Principles of Genetics. New York, Toronto, 1997.- 829 p.
4.	Tęstiniai mokslo leidiniai: Biologija, Sodininkystė ir daržininkystė, Žemdirbystė-Agriculture ir kt.
5.	Journal of Plant Breeding and Genetics. eSci Journals Publishing
6.	Theoretical and Applied Genetics. Springer
7.	Molecular Plant Breeding. BioPublisher Platform
8.	8. Journal of Plant Genetics and Transgenics. A@ademy Journals Inc.

Course programme designed by

No.	Name, surname	Institution	Degree	E-mail address
1.	Vidmantas Stanys		Prof. habil. dr.	v.stanys@lsdi.lt
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