

Study program/Study programs : Organic farming			
The type and level of studies: Undergraduate studies (US)			
Course title: Genetics and Genetic Resources - Генетика и генетички ресурси			
Teacher: Prof. dr Sofija R. Petrović; Prof. dr Miodrag D. Dimitrijević			
Assistant: Master eng. Borislav M. Banjac			
Course status: Obligatory - 3OOP3014			
ESPB Number: 5			
Prerequisite: None			
The aim of the Course			
The course is designed as a logical combination of general genetics and utilization of genetic resources. It aims to familiarize participants with the general principals of inheritance, transfer of genetic information and the creation of novel genetic variability in a part of general genetics, as well as, the basic principles of recognition, collection, storage, analysis and utilization of genetic resources in breeding programs and commercial production. In the part relating to genetic resources, a particular attention will be paid to introducing students to the concepts of biodiversity, the processes leading to its endangerment and erosion, as well as the procedures for conservation of biological diversity and the utilization of genetic variability, especially in spontaneous and local populations of plants.			
The outcome of the Course			
The participants are to be able to further upgrade their knowledge and capabilities through the master and doctoral study programs for scientific work, to participate in breeding programs of agricultural organisms and for the economy, in jobs that require the understanding of the functioning of the hereditary material of organisms, genotype by environment interactions and obtaining new economically exploitable genetic variability. In the part of the Course concerning genetic resources, the student who successfully completes the Course is qualified for further upgrade through the master and doctoral studies in the direction of genetic variability conservation (inventory, collection and storage), as well as for scientific and professional teamwork in the preservation and utilization of biodiversity.			
Course content			
<i>Theoretical Classes</i>			
Introduction. The organism and the environment. The construction of cells and chromosomes. The structure and function of the genetic material. Cell division and fertilization. Independent gene segregation. Multiple alleles. Interactions of non-allelic genes. Genetic linkage. Sex determination and sexually related genes. Inheritance of quantitative traits. <i>Species</i> and <i>genus</i> hybridization. Changes in the genome. Genetic principles of the population. Inbreeding. An introduction to a biological diversity. Genetic resources. The centers of origin of the crops. The erosion of biodiversity. Restoring and preserving genetic variability. Collecting the genotypes. Methods of preserving genetic variability. The utilization of genetic variability in agriculture.			
<i>Practical teaching: Exercise, Other modes of teaching, Study research work</i>			
Practical classes are held during the exercise program and monitors and follows the lecture topic.			
Recommended textbooks			
<i>Primary reading</i>			
1. Borojević, Slavko, Borojević, Katarina 1976: Genetics. Faculty of Agriculture, Novi Sad. [orig. serbian]			
2. Borojević, Slavko 1981: Principles and Methods of Plant Breeding. W.U. "Radiovoj Ćirpanov", Novi Sad [orig. serbian]			
3. Kraljević-Balalić, Marija, Petrović, S., Vapa, Ljiljana 1991: Genetics. Theoretical fundamentals and problems. Faculty of Agriculture, Institute of Field and Vegetable Crops and Faculty of Sciences, Novi Sad. [orig. serbian]			
4. Dimitrijević, Miodrag, Petrović, Sofija 2005: Population Genetics. Genotype Adaptability and Stability. Publ. Faculty of Agriculture, Novi Sad, Institute of Field and Vegetable Crops, Novi Sad. [orig. serbian]			
<i>Recommended reading</i>			
1. Marinković, M., Tucić, N., Kekić, V.: Genetics, Scientific book, Beograd, 1982. [orig. serbian]			
2. Dimitrijević, M., Petrović, Sofija: Genetically Modified Organisms. Issues and Dilemmas. Green network of Vojvodina, Novi Sad, 2004. [org. serbian]			
3. Bošković, Jelena, Isajev, V.: Genetics. Megatrend University, Beograd, 2007. [orig. serbian]			
4. Proserpi, J. M., Guy, P., Bafourier, F., Ressources génétiques des plantes fourragères et à gazon. INRA, Paris, 219, 1996			
5. Food and Agricultural Organization of the United Nations: Coping with Climate Change. The Roles of Genetic Resources for Food and Agriculture. Rome, 2015.			
6. Youth and United Nations global alliance learning and action series supported, 2013: The Youth Guide to Biodiversity, Ed. Christine Gibb, Neil Pratt, Reuben Sessa, FAO.			
<i>All the other publications on the topic recommended or approved by the teachers.</i>			
Number of lectures			Other hours
Lectures:	Exercises:	Other forms of lecturing:	Scientific research work:
60	30	0	0
Teaching methods			
Teaching is conducted using modern techniques. Theoretical classes of the Course are held in a Faculty lecture halls. All lectures are computer processed and presented. The practical part of the course takes place in cabinetmaking work for it equipped air-conditioned room, with individual seats for students (40 seats), which is equipped with a computer, video beam, overhead projectors and microscopes			
Evaluation of knowledge (maximum 100 points)			
Pre-exam commitments	Points	Final examination	Points
Activity during the Course	5	Written examination	30
Activity in practical classes	2,5	Oral examination	30
tests		3x10	
projects		2,5	
Method of testing knowledge could be different, and in the table above just a few options are given: (written exams, oral exam, project presentations, seminars, etc)			

Study program/Study programs : Organic farming			
The type and level of studies: Graduate studies - Master (GSM)			
Course title: The Utilization of Genetic Resources - Коришћење генетичких ресурса			
Teacher: Prof. dr Miodrag D. Dimitrijević; Prof. dr Sofija R. Petrović; Assistant: Master eng. Borislav M. Banjac			
Course status: Elective 3MOP112			
ESPB Number: 6			
Prerequisite: The Course relies on previous basic knowledge of genetics and biodiversity			
The Aim of the Course The aim of the course is to improve student's knowledge of biodiversity, the processes leading to its endangerment and erosion, as well as the procedures for conservation of biological diversity and the utility of genetic variability, especially in spontaneous and local populations of plants.			
The outcome of the Course A student who successfully completes the master course The utilization of genetic resources is qualified for further development through doctoral (PhD) studies in the direction of handling genetic resources variability (identification, collection, inventory, and storage), as well as for scientific and professional teamwork in conservation and use of biodiversity.			
Course content <i>Theoretical Classes</i> Genetic resources. Biodiversity (definition and vulnerability). The centers of origin of crops. The erosion of biodiversity. Revitalization of genetic variability. Genetic collection in the conservation strategy of genetic resources. Gene Bank. Collecting the genotypes. Using genetic variability in agriculture. Creating a policy of preserving biodiversity. <i>Practical teaching: Exercise, Other modes of teaching, Study research work</i> Practical classes are held during the exercise program and monitors and follows the lecture topic. A small experimental field and Cyto and molecular genetics laboratory could be used for the practical skills improvement.			
Recommended textbooks 1. Borojević, Slavko 1981: Principles and Methods of Plant Breeding. W.U. "Radivoj Ćirpanov", Novi Sad [orig. serbian] 2. Acquaah, George 2007: Principles of Plant Genetics and Breeding. Blackwell Publ., UK. 3. Prospero, J. M., Guy, P., Bafourier, F. 1996: Ressources génétiques des plantes fourragères et à gazon. INRA, Paris, 219. 4. Food and Agricultural Organization of the United Nations, 2015: Coping with Climate Change. The Roles of Genetic Resources for Food and Agriculture. Rome 5. Jaramillo, S. and M. Baena, 2002. <i>Ex situ</i> conservation of plant genetic resources: training module. International Plant Genetic Resources Institute, Cali, Colombia. 6. Painting, K.A., M.C. Perry, R.A. Denning and W.G. Ayad. 1995: Guidebook for genetic resources documentation. International Plant Genetic Resources Institute, Rome. 7. Youth and United Nations global alliance learning and action series supported 2013: The Youth Guide to Biodiversity, Ed. Christine Gibb, Neil Pratt, Reuben Sessa, FAO. 8. FAO. 2011. Molecular genetic characterization of animal genetic resources. FAO Animal Production and Health Guidelines. No. 9. Rome. <i>All the other publications on the topic recommended or approved by the teachers.</i>			
Number of lectures			Other hours
Lectures:	Exercises:	Other forms of lecturing:	0
30	30	0	
Scientific research work:			
0			
Teaching methods Teaching is conducted using modern techniques. Theoretical classes of the Course are held in a Faculty lecture halls. All lectures are computer processed and presented. The practical part of the course takes place in cabinetmaking work for it equipped air-conditioned room, with individual seats for students (40 seats), which is equipped with a computer, video beam, overhead projectors and microscopes.			
Evaluation of knowledge (maximum 100 points)			
Pre-exam commitments		Points	Final examination
Activity during the Course		5	Written examination
Activity in practical classes		2,5	Oral examination
tests			3x10
projects			2,5
Method of testing knowledge could be different, and in the table above just a few options are given: (written exams, oral exam, project presentations, seminars, etc)			

