

Discipline	GENETICS AND BIOTECHNOLOGY code: 16 winter semester		
Specialty	AGRONOMY		
ECTS credits: 6	Form of assessment: Exam		
Lecturer	Assoc. prof. Miglena Drumeva PhD Room NUK 331 Phone: +359 52 385 725 E-mail: m_drumeva@tu-varna.bg		
Department	PLANT PRODUCTION		
Faculty	<i>FACULTY OF MECHANICAL ENGINEERING AND TECHNOLOGIES</i>		
<p>Learning objectives: The curriculum is intended for students of a Bachelor's degree program in Agronomy. The subject of genetics is the inheritance of traits in living organisms: viruses, bacteria, plants, animals and humans. Genetics reveals the laws of heredity and gives an explanation for the finest inheritance mechanisms, from nucleic acid molecules to populations. By studying genetics and the latest advances in genetic biotechnology in agriculture, students get an idea of the meaning and location of individual phenomena in the living environment, of the processes underlying the reproduction and reproduction of genetic material, of the latest discoveries in genetics and their use against human, animal and plant diseases. In the genetics exercises students learn basic processes and terms such as mitosis, meiosis, euploidy, aneuploidy, mutagenesis, polymorphism, spermatogenesis and others. They acquire specific knowledge and skills to make microscopic preparations, to observe cells and parts of its core structures - nucleus, protoplasmic organelles, chromosomes. Genetics provides a scientific and methodological basis for a number of branches of biology: plant growing, plant breeding, seed production, biochemistry, physiology, plant protection, etc. The knowledge of reproduction, based on mitosis and meiosis, gametogenesis and polyploidy gives a basis for plant breeding and selection. Genetics, along with biotechnological methods, is related to other major disciplines such as microbiology, anatomy, botany, general biology, histology and phytopathology. New products of gene engineering techniques, known as genetically modified varieties and hybrids (corn, sunflower, wheat, rice, potatoes, etc.), cloned animals, and recent stem cell experiments represent the achievements of modern genetics and biotechnology</p>			
CONTENTS:			
Training Area		Hours lectures	Hours seminar exercises

Subject and main stages in the development of genetics in our country and around the world	2	
Mendelian genetics	4	
Deviations from Mendelian genetics	4	
Chromosomal basis of heredity	2	
Asexual and sexual reproduction	4	
Gender genetics.	2	
Extranuclear inheritance	2	
Genotypic variability.	2	
Modification variability	2	
Nature of the genetic material	2	
Genetic Engineering	4	
Microscope setup and preparation of preparations.		2
Preparation of plant material for meiosis.		4
Grain: endosperm and germ.		4
Drosophila as objects in genetics		2
Mutational and modification variability		4
Probability and Statistics		2
Nature and application of tissue and cell cultures in plant breeding.		4
Genes: isolation, markers, vectors		4
Methods of molecular genetics: RFLP, SSR (PCR amplification), ISSR, AFLP, RAPD, REMAP & IRAP..		4
<b>TOTAL: 60 h</b>	<b>30</b>	<b>30</b>