Discipline	Phytopharmacy code: 51 summer semester	
Specialty	AGRONOMY	
ECTS credits: **5**	Form of assessment: Exam	
Lecturer	Assoc. prof. Nadya Daskalova PhD Room NUK 124 Phone: +359895317358 E-mail: nadia.daskalova@tu-varna.bg	
Department	PLANT PRODUCTION	
Faculty	*FACULTY OF MECHANICAL ENGINEERING AND TECHNOLOGIES*	

Learning objectives:

The main task of modern agriculture is the production of highly productive and quality products from agricultural crops, in order to feed the population and satisfy the needs of industry and foreign markets. One of the main ones priorities in achieving this objective is to minimize harmful insect losses, diseases and weeds on cultivated plants. Basic approach to realization of protected production is the chemical method, which is closely related to biological, physical-mechanical, agrotechnical, etc. methods.

Proper and safe application of the chemical method requires well-trained personnel.

The main task of the discipline "Phytopharmacy" is to acquaint students with modern chemical agents based on newly synthesized, selective preparations for plant protection and their correct application, with the aim of protecting the environment and human health.

The discipline is an important unit of Plant Protection, without the study of which the future agronomist would not develop as a specialist. For this purpose, young plant protectionists must know the essence of pesticides, their application to the pest, the mechanism of action, their miscibility with other plant protection preparations and the risk of phytotoxicity. It is necessary to master the technique of treatment and decontamination, the conditions for their correct application, to comply with the instructions for safe operation and storage of plant protection preparations, as well as to follow the news about them in the member states of the European Union.

CONTENTS:

Training Area	Hours lectures	Hours laboratory exercises

Nature, importance and tasks of the chemical method of pest control. Types of methods for combating pests on cultivated plants. Advantages and disadvantages of the chemical method.	1	
Conditions for treatment with plant protection preparations (PPPs). Rules for preparing vegetable dissolved. Regulated dose. Mixing order of PPP in the tank of the sprayer.		2
Procedures for creating PPPs. Features of chemical means of control. Poison and poisonous properties. Mode of action of the poison on the living cell. Determination of toxicity. Human poisoning and first aid.	1	
Dose and concentration calculations (problem solutions). Types of decontamination and treatment. Seed treatment, soil treatment, treatment of planting material.		10
Subdivision of chemical means: according to pests, according to their mode of action, according to their origin. Types of spraying according to the season. Types of treatments according to growing conditions and nature of pests. Forms and methods of application. Phytotonicity and Iatrogenic effect. SAR system and included under the MoA synthetic and organic inducers (P- group of fungicides; N- unknown fungicides).	1.5	
Mixing (combining plant protection preparations). Types of phytotoxicity in plants. Fractional concentrations.		8
Classification of pesticides based on MoA – Mechanism of action. Way of acting. Grouping of fungicides by way of action. Timeline of fungal pathogenesis and fungicides applications.	0.5	
Preparation of Bordeaux solution. Perennial Algorithms. Calibration formulas.		6
Inorganic fungicides. MoA classification.	1	
Pesticide adjuvants (adjuvants). Growth regulators. R and S phrases. Oils - application. Soaps - application.		4
Organic fungicides: contact and penetrating-translaminar. MoA.	1	
Systemic fungicides. Classification by MoA.	1	
Zoocides - general conditions. Grouping of zoocides according to their mode of action. Neuromuscular acting. MoA classification.	3	
Zoocides - Growth suppressants (hormonal - general and specific active substances) acting on respiration and on the midgut. Insecticides with an unknown or non-specific mechanism of action. Classification of MoA.	2	
Limacides, rodenticides - currently active substances.	0.5	
Herbicides: Classification of herbicides according to the mode of action (according to the Herbicide Resistance Action Committee).	1.5	
Impact of pesticides on biocenoses and soil microorganisms. Resistance to pesticides.	1	
TOTAL: **45** h	**15**	**30**