Discipline	*ECOLOGY* code: 18a winter semester	
Specialty	AGRONOMY	
ECTS credits: **4**	Form of assessment: Continuous assessment	
Lecturer	Assoc. prof. Pavlina Naskova, PhD Room: NUK 303 Phone: +359 52 383 368 E-mail: pnaskova@abv.bg	
Department	PLANT PRODUCTION	
Faculty	*FACULTY OF MECHANICAL ENGINEERING AND TECHNOLOGIES*	

Learning objectives:

Annotation:
The global problems of our time and, above all, the contradictions "human-nature" and "society-environment" highlight environmental protection. The subject "Ecology" aims at acquainting students with:
• The environmental laws of the complex connections of abiotic components such as the lithosphere, the pedosphere, the hydrosphere, the atmosphere, the climatic and cosmic factors with living organisms;
• Complex environmental laws on biogeochemical circularity (the movement of matter) and the flow of information and energy on ecological trophic chains, networks and pyramids into ecosystems and the biosphere;
• Complex laws of bioproductivity, homeostasis (dynamic equilibrium) and energy of ecosystems, biosphere, the laws of the movement of matter, energy and information on complex trophic chains, networks and pyramids;
• To know the complicated tasks of ecological natural laws and the problems caused by the anthropogenic factors in making management decisions on the protection of ecosystems from technogenic impact.

CONTENTS:

Training Area	Hours lectures	Hours seminar exercises

Principles of Ecology Classification. Factors. Definitions and concept. Types of environmental factors.	2	
Edaphic (soil) environmental factors. Solid phase of the soil. Liquid phase of soil and organisms (organic matter, macro, microelements). Gaseous composition of soil and organisms. Living phase of soil and organisms.	2	
Soil pollution with heavy metals - resistance, sensitivity, plants - indicator. Measures aimed at overcoming pollution with heavy metals.	2	
Soil acidity. Soil salinity. Soil fungistasis. "Soil fatigue". Biological rhythms. Life forms plants.	2	
The hydrosphere and organisms. Relationship of water density, air in water and organization. The water, the oxygen in it and the living organisms. Thermal properties of water and organisms. Mineral substances in water and organisms. Ecological types of land plants depending on their relationship to water. Ecology of aquatic plants.	2	
Climatic environmental factors. Solar radiation. Atmospheric environmental factors.	2	
Ecological groups of plants depending on their light requirements. Adaptation of plants to a different lighting regime. Light stress in plants.	2	
Temperature as an environmental factor. Diurnal and annual variation of air temperature. Temperature stress in plants. Adaptation of plants to different temperature regimes. Heat resistance. Cold resistance.	2	
Air as an environmental factor. Atmospheric humidity, precipitation and organisms. Atmospheric pollution, resistance, sensitivity. Plants – indicators. Measures to reduce the impact of pollution on plants.	2	
Ecology of populations. Structure. Dynamics. The population in the community. Positive and negative interactions between two species. Allelopathy. Structural-functional organization and dynamics of communities. Planetary biomes. Successions. Climax.	2	
Ecosystems. Structure. Homeostasis. Classification of ecosystems. Productivity (primary, secondary). Ecological trophic chains and webs and pyramids. Energy efficiency of ecosystems. Detrital pathway of energy in ecosystems.	2	
Biogeochemical cycle of substances. Concepts and definitions. Water cycle, O2, C, N P, S. General for the cycle of biogenic elements.	2	
Global ecology. Concepts and definitions. Biosphere - evolution. Primary and secondary productivity of ecosystems.	2	
Global pollution of the biosphere. Global atmospheric pollution. Global water pollution. Global soil pollution.	2	
Environmental crisis. Environmental disaster. Concepts. Development. Modern	2	

condition.		
Terrestrial Ecology. Terrestrial biota and biogeographic regions. Soil - living phase - biota. Ecology of forest territories. Forest plant zoning of Bulgaria. Forest plant ecological indicators.		2
Agroecology. Animal husbandry ecology. Environmental management in crop production.		2
Relationships between plants and animal organisms. Relationships between higher plants and animals - phytophages (insects - phytophages; mites - phytophages; hematodes - phytophages; warm-blooded animals - phytophages). Insects - pollinators. The animal propagators of plants (zoochory).		2
Ecology of man-made ecosystems. City (urban), industrial, ecosystems in energy, ecosystems in transport.		2
Ecology of freshwater, marine and estuarine ecosystems. Estuary as a potential for food production.		2
Management of protected areas. Conservation of biological diversity and the genetic pool. Biosphere reserves. Protected natural areas in Bulgaria.		2
Monitoring at the population, coenotic and ecosystem level. European environmental legislation. Environmental management.		3
TOTAL: **45 h**	**30**	**15**