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| Discipline | <i>ECOLOGY</i> | |
| | code: 18 a | winter semester |
| Specialty | Agronomy | |
| ECTS credits: 4 | Form of assessment: Exam | |
| Lecturer | Assoc. Prof. Dr. Pavlina Naskova | |
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| Department | Plant Production | |
| Faculty | Faculty of Manufacturing Engineering and Technology | |
| <p>Learning objectives:</p> <p>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:</p> <ul style="list-style-type: none"> • 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 for the classification of ecology. Factors. Definitions and concept. Types of environmental factors. | 2 | 1 |
| Edaphic (soil) environmental factors. Solid phase of the soil. Liquid phase of soil and organisms (organic matter, macro, trace elements). Gaseous composition of soil and organisms. Living phase of soil and organisms. | 2 | 1 |
| Soil contamination with heavy metals - resistance, sensitivity, plants - indicator. Activities aimed at overcoming heavy metal pollution. | 2 | 1 |
| Soil acidity. Soil salinity. Soil fungistasis. Soil fatigue. Biological rhythms. Life forms of plants. | 2 | 1 |
| Hydrosphere and organisms. Relationship between density of water, air in water and organization. Water, oxygen in it and living organisms. Thermal properties of water and organisms. Mineral substances in water and organisms. Ecological types of terrestrial plants depending on their relationship to water. Ecology of aquatic plants. | 2 | 1 |

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| Climate environmental factors. Solar radiation. Atmospheric environmental factors. | 2 | 1 |
| Ecological groups of plants depending on their requirements for light. Adaptation of plants to different lighting modes. Light stress in plants. | 2 | 1 |
| Temperature as an environmental factor. Day and year changes in air temperature. Temperature stress in plants. Adaptation of plants to different temperature regimes. Heat resistance. Cold resistance. | 2 | 1 |
| Air as an environmental factor. Atmospheric humidity, precipitation and organisms. Atmospheric pollution, stability, sensitivity. Plants - indicators. Measures to reduce the effects of pollution on plants. | 2 | 1 |
| Population ecology. Structure. Dynamics. Community population. Positive and negative interactions between two types. Allelopathy. Structural and functional organization and dynamics of communities. Planetary biomes. Successions. Climax. | 2 | 1 |
| Ecosystems. Structure. Homeostasis. Classification of ecosystems. Productivity (primary, secondary). Ecological trophic chains and nets and pyramids. Ecosystem energy efficiency. Detrital path of energy in ecosystems. | 2 | 1 |
| Biogeochemical cycle of substances. Concepts and definitions. Water Cycle, O ₂ , C, N P, S. Total for the cycle of nutrients. | 2 | 1 |
| Global Ecology. Concepts and definitions. Biosphere - evolution. Primary and secondary productivity of ecosystems. | 2 | 1 |
| Global Pollution of the Biosphere. Global atmospheric pollution. Global water pollution. Global soil pollution. | 2 | 1 |
| Ecological crisis. Ecological disaster. Concepts. Development. Current status. | 2 | 1 |
| TOTAL: 45 h | 30 | 15 |