|  |  |  |
| --- | --- | --- |
| **STUDY PROGRAMME:** | **Professional Undergraduate Study Programme *Agriculture***  Specific field of study: Course foundations | |
| **Course:** | **PRINCIPLES OF PLANT PRODUCTION** | |
| **Course code:** 273332  **Course status**: compulsory | **Semester: II** | **ECTS credits: 5,5** |
| **Course holder:** | **Iva Rojnica,** M.Eng.Agr, lecturer | |
| **Course associates:** | **Martin Bužić**, M.Eng.Agr. | |
| **Modes of delivery:** | **Number of hours** | |
| **Lectures** | 45 | |
| **Excersises,** | 30 | |
| **Practical training** | 8 | |

**Course objectives:** To train students to define an agroecosystem based on existing knowledge about soil and climate, where the agrotechnical measures they learn about in lectures, exercises, and project assignments will contribute to the stability of the agroecosystem and agricultural production.

**Course content**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Course units** | | **Modes of delivery:** | | | | **Places of delivery:** |
| **L** | | **E** | |
| 1.  1.1. | Introduction, concept of agriculture, features of plant production,  History of agriculture | 2  2 | |  | | Classroom |
| 2.  2.1.  2.2.  2.3.  2.4. | Agrosphere, elements of the agrosphere  Agroecology  Atmospheric vegetation factors  Edaphic vegetation factors (layers of anthropogenic soil, absolute and effective depth, texture, natural layering, drainage, stoniness, rockiness, soil macroorganisms)  Relief | 2  2  2  3 | | 1 | | Classroom |
| 3.0 | Yield | 2 | |  | | Classroom |
| 4.0 | Agrotechnical complex, concept | 1 | | 1  1  1  2  1 | | Classroom,  Plant Production Practicum |
| 4.1.  4.1.1  4.1.2.  4.1.3.  4.1.4. | Plant production systems  Plant production systems on arable land  Crop rotation, elements of crop rotation, reasons for introducing crop rotation  Designing crop rotations; examples of crop rotations  Monoculture, crop associations, and free crop rotation  Plant production systems for woody crops | 1  1  1  1 | |
| 4.2. | Soil tillage, objectives, tasks, and disadvantages, history of soil tillage | 2 | |
| 4.2.1. | Timing of soil tillage |  | |
| 4.2.2 | Primary soil tillage, objectives and tasks, plowing with moldboard plows, plowing techniques | 2 | |
| 4.2.2.1 | Deep plowing, subsoiling, deep loosening, mole drainage | 2 | |
| 4.2.3. | Secondary soil tillage, objectives and tasks | 1 | |
| 4.2.3.1. | Methods of secondary soil tillage (planing, harrowing, disking, cultivating, rolling) |  | |
| 4.2.4. | Special methods of soil tillage | 1 | |
| 4.2.5. | Soil tillage system, classification | 1 | |
| 4.2.5.1 | Soil tillage system on arable land | 2 | |
| 4.2.5.2 | Soil tillage system for woody crops | 1 | |
| 4.2.5.3 | Plowing of permanent grasslands and clover fields | 1 | |
| 4.2.6. | Reduction of classical tillage systems, conservation tillage | 1 | |
|  | (MIDTERM I) |  | |
| 4.3. | Fertilization, definition, and history of fertilization | 1 | | 3  2  5 | | Classroom,  Plant Production Practicum |
| 4.3.1 | Nutrients and humus in anthropogenic soil | 2 | |
| 4.3.2. | Management of crop residues | 1 | |
| 4.3.3. | Fertilizers, definition, and classification | 1 | |
| 4.3.3.1 | Organic fertilizers (manure, slurry, liquid manure, sapropel, feces) |  | |
| 4.3.3.2 | Compost and green manure | 2 | |
| 4.3.3.3 | Industrial fertilizers, definition, and classification | 1 | |
| 4.3.3.4 | Liming |  | |
| 4.3.3.5 | Time and method of fertilizer application | 2 | |
| 4.3.3.6 | Examples of fertilization of arable crops |  | |
| 4.4.  4.4.1.  4.4.2.  4.4.3. | Biological reproduction; sowing and planting  Seeds; seed characteristics  Methods of sowing and planting  Sowing rate – tasks | 1 | | 2  1  3 | | Laboratory for testing the quality of agricultural reproduction material |
| 4.5.  4.5.1 | Crop care; division of care operations  Care of annual and perennial crops |  | | 1  2  4 | | Classroom |
|  | Alternative agriculture  (MIDTERM II) |  | |
| **In total** | | | **45** | | **30** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Practical training | | | |
| 5. | PROJECT ASSIGNMENT | | |
| 5.1. | FERTILIZER TASK - BASED ON PRE-EXISTING CHEMICAL SOIL ANALYSIS | 4 | Plant Production Practicum |
| 5.2. | ASSIGNMENT IN SEED PROCEEDING - CALCULATION OF THE REQUIRED QUANTITY OF SEEDS FOR SOWING | 4 | Plant Production Practicum |
| **IN TOTAL** | | **8** |  |

L=Lectures, E=Excersises, PT=Practical training

**Learning outcomes (LO)**

LO 1. Assess the agroecological characteristics of a specific area (agroecosystem)

LO 2. Connect the concept of yield with the factors that affect it

LO 3. Select soil tillage systems adapted to the plant production system, and predict possible harmful as well as beneficial deformations that may occur during soil tillage

LO 4. Relate the importance of soil fertility to the elements of plant nutrition and the principles of fertilization, and plan the necessary fertilization

LO 5. Interpret biological reproduction and the use of high-quality sowing and planting material, and plan the required amount of seed for sowing

LO 6. Plan and propose crop care measures with regard to the plant production system

Course holder:

Iva Rojnica, M.Eng.Agr., lecturer

Križevci, July 2024