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| **STUDY PROGRAMME:** | **Professional Undergraduate Study Programme *Agriculture*** Specific field of study: Zootechnics  |
| **Course:** | **ANIMAL NUTRITION** |
| **Course code:** 273302**Course status**: compulsory  | **Semester:** III | **ECTS credits: 7.0** |
| **Course holder:** | **Dejan Marenčić,** Ph.D., professor of professional studies |
| **Course associates:**  | **Goran Mikec**, M.Eng.Agr., assistant,  |
| **Modes of delivery:** | **Number of hours**  |
| Lectures | 45 |
| Excersises | 15 |
| Seminars | 15 |
| Practical training | 23 |

**Course objectives:** enable the students to independently evaluate the content of nutrients in fodder and

nutritional requirements of livestock, as well as to independently make meal – fodder mixture for all categories of livestock in line with legal regulations and environment protection.

**Course content**

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|  |  | **Modes of delivery:** | **Places of delivery** |
|  | **Course units**  | **L, E, S, PT** |
|  | Introduction in subject: The feeding effects on productivity and economy of livestock production. Composition of plant and animal organism. Concept of feed and nutrients. | L (1) | Lecture room |
|  | The general chemical composition of feed: water and dry matter, crude proteins, crude fats (ether extracts), nitrogen free extract, Crude ash-total minerals, Neutral detergent fiber, Acid detergent fiber, Acid detergent lignin, Non-fiber carbohydrates. | L (6) | Lecture room |
|  | Introduction with feeds and their organoleptic evaluation. | E (2) | Practicum |
|  | The basic principles of the supply of nutrients and active substances: requirments and supply with energy, protein, minerals and vitamins. | L (11) | Lecture room |
|  | Evaluating the nutritional properties of feed and meals: Fodder and meals sampling and their preparation for analysis. The importance and basics of chemical analysis | E (3) | Practicum |
|  |  Nutrient requirements (maintenance, productive and product unit requirements) | L (2) | Lecture room |
|  | Feed digestibility (in vivo, in vitro, feed digestibilityfactors), feed balances (nitrogen, carbon, energy, mineral balances) | L (4) | Lecture room |
|  | Principles of animal feeding in individualperiods of development and production (growth-fattening, pregnancy, lactation, sport-work) | L (4) | Lecture room |
|  | Fodders in livestock feeding (roughage, concentrated), Assessment of nutritional feed value, Additives (basic additives and other permitted additives with regard to the rulebook of feed quality), Preservation and storage of fodder. | L (7) | Lecture room |
|  | Fodder storage: Silage Storage Techniques (silage, haylage and hay) | E (1) | Lecture room |
|  | Applied nutrition: Basic technique of meal design | L (7) + E (3) | Lecture room |
|  | Calculation of nutritional value and its differences: Gross Energy (GE); Digestible Energy (DE); Metabolisable Energy (ME); Netto Energy Lactation (NE); Crude Protein; Utilisable Crude Protein (uCP): Ruminal Nitrogen Balance (RNB); Physically effective neutral detergent fiber (peNDF); Structural Index (SI) | S (7) | Lecture room |
|  | Fodder mixtures (complete, supplementary, premixes) | L (5) | Lecture room |
|  | Production and application of fodder mixtures: Compilation of complete and supplementary fodder mixtures with certain energy and protein content for monogastric and polygastric livestock. Application of fodder mixtures in wider practice. The use of computers in the preparation of mixture recipes. | E (6) + S (14) | Lecture room |
| **In total** | L (45) + E (15) + S (15) |  |
| Practical training | PT (23) | Practicum |

**L=Lectures, E=Excersises, S=Seminars, PT=Practical training**

**Learning outcomes (LO)**

LO 1. To classify nutrients and their more important representatives

LO 2. To determine the chemical composition and nutritional value of fodder

LO 3. To computationally evaluate the nutritional value of feed in recent practical units, based on chemical composition and digestibility coefficient, as well as the nutritional needs of animals

LO 4. To create the basic principles of feeding livestocke in certain periods of development and production

LO 5. To recommend the procedure for preparing meals/fodder mixtures in livestock feeding

LO 6. To design meals- a feed mixture that meets the needs of livestock, without harmful effects on the health of people and livestock, with as little environmental pollution as possible

 Course holder:

 Dejan Marenčić, Ph.D., professor of professional studies

Križevci, July 2024