**FINAL EXAM TOPICS**

STIPENDUM HUNGARICUM UNDERGRADUATE DEGREE IN AGRICULTURAL ENGINEERING

*Agro-environmental Management Specialization*

***“A” Topics***

***Agricultural Production Technologies***

1. Dairy cows breeding, nutrition, production systems. Biological and technological factors in dairy cow husbandry, breeding, feeding, and technology. The system of quality milk production. Calf rearing methods in dairy and beef herds. Biological, technological and management aspects of heifer rearing.
2. Beef cattle nutrition requirements. Farming conditions of beef cows, farming conditions in the main regions of the country. Technological variations in beef fattening.
3. Main characteristic of sheep and of goats their production system in Hungary. The main technological variants of sheep farming, breeding and feeding. Changes in the value of sheep products in recent decades. Breeding and fattening of lambs, the role of the export market in the production of sheep products.
4. Poultry production systems. Main Hungarian poultry breeds. Structural features of the poultry sector. Rearing of parent pairs of hens, production of quality breeding eggs. Production of table eggs, animal welfare requirements. Technological and management features of broiler chicken production.
5. Domestication of horse and utilization ways. Horse reproduction. The specificity of domestic horse breeding. The potential of the horse.
6. Production technology models in winter wheat production (main information about the ecological conditions, soil conditions, crop rotation, critical phenophases, agrotechnical elements and technology).
7. Production technology models in maize production (main information about the ecological conditions, soil conditions, crop rotation, critical phenophases, agrotechnical elements and technology).
8. Production technology models in sunflower production (main information about the ecological conditions, soil conditions, crop rotation, critical phenophases, agrotechnical elements and technology).
9. Production technology models in oilseed rape production (main information about the ecological conditions, soil conditions, crop rotation, critical phenophases, agrotechnical elements and technology).
10. Environmental and methodological aspects of precision farming's process (environmental problems facing agriculture, BiG DATA in the agriculture, method of precision agriculture, environmental aspects of variable rate technology, precision soil sampling and nutrient management, pest management)

***„B” Topics***

***Agro-environmental Management***

1. Soil pollution (main types, sources, effects), soil degradation types (erosion, deflation, acidification, secondary alkalization, soil compaction) and their prevention processes and management.
2. Water pollution (main types, sources, effects), water quality and water characteristics (physical, chemical, microbiological). Wastewater management (primary treatment, secondary treatment, tertiary treatment, sludge treatment and disposal).
3. Air pollution, (main types, sources, effects), air quality, air pollution minimization and control. Pollution prevention technics. Global environmental problems affecting the atmosphere (climate change and agricultural production).
4. Basic elements and tools of landscape management (definition of landscape management, basic elements; tools: diversity preserving farming systems, technological adaptation, connection and harmony of plant production and livestock farming)
5. Landscape management of different production sites (production sites with extreme and limited filtration capacity; areas suitable for extensive grass, grassland and pasture ground; areas suitable for crop production; areas suitable for horticulture; the forestry; wetlands)
6. Significance of Integrated Plant Protection in crop production technologies, and its role in food supply and food security. Ecological and economic principles of Integrated Plant Protection (ecosystem-based management system, natural control factors, economic thresholds: EIL, AT). Main components of IPP strategies (prevention, monitoring, intervention).
7. Specification of the most important prescriptions of organic plant production according to EU organic regulation (definition and principles of organic farming; regulation; prescriptions of soil management, plant protection, propagation materials, conversion period, parallel production)
8. Agricultural waste management technological system (waste types, hazardous wastes, waste collection and storage, waste disposal, recycling and reusing).
9. Solid biomass production methods and usage possibilities as energy sources (definition and grouping of solid biomass, woody energy plants and by-products, herbaceous energy plants and by-products, their utilization).
10. Biogas and biofuel (biodiesel, bioethanol) production methods and usage possibilities (definition, characterization, raw materials and their sources, processing, utilization).