



Final state exam topics

Sustainable Rural Development in Tropics and Subtropics

Obligatory courses

Appropriate technologies

Corridor supervisor/ Leading examiner: Ing. Tatiana Ivanova, Ph.D.
Co-examiner: assoc. prof. Vladimír Krepl, CSc.
Related courses: *Management of Energy Resources in TS*
Introduction to Engineering

Main topics:

Description of non-renewable energy sources
Renewable energy technologies
Legislation and strategy for Renewable energies
Policy in oil and gas production
Ecological footprint, Emission trading
Introduction to Material Science
Introduction to Machine Tool Technology
Means of Transport – main design and efficiency
Design of Tractor, thermodynamic principles and design of IC Engine
Food processing technologies for selected agricultural commodities

Sustainable Development Strategies

Corridor supervisor/ Leading examiner: Ing. Jana Mazancová, Ph.D.
Co-examiner: assoc. prof. Jan Banout, Ph.D.
Ing. Vladimír Verner, Ph.D.
Related courses: *Global Food strategies*
Development and Poverty Reduction Strategies
Rural Sociology and Demography

Main Topics:

Definition of food security
Food security analyses
Role of agriculture and food trade in food security
Basic food and nutrient resources
Food waste and nutrient losses
Genesis and classification of farming and rural systems
Process analysis
Family/Household resource analysis
Farm, household analysis (living standard criteria, food security, livelihood approach)

Economic evaluation methods
Classification of development/backwardness
Dynamic categories of development
Role of private capital in poverty reduction strategies (Contract farming)
Bottom-up and altruistic approaches for poverty alleviation
Research methods in Social Sciences
Social framework of MDGs/SDGs
Globalisation and its impact on livelihood strategies
Gender issue in rural development

Optional courses

Environmental Engineering

Corridor supervisor/ Leading examiner: Ing. Tatiana Ivanova, Ph.D.

Co-examiner: assoc. prof. Vladimír Krepl, CSc.
assoc. prof. Jan Banout, Ph.D.

Related courses: *Environmental Engineering Technology*
Organic Waste Management

Main topics:

Production and utilization of solid biofuels
Liquid and gaseous biofuels, Algae biotechnology
Municipal solid waste management – dispose and energy recovery methods, zero waste concept
Treatment of water and soil pollution
Introduction to Climate Changes – GHGs, Aerosols, Montreal and Kyoto protocol
Definition of composting
Optimal C:N ratio for fresh compost mixture
Indicators of compost stability
Main composting methods
Main steps in anaerobic digestion

Food processing

Corridor supervisor/ Leading examiner: assoc. prof. Jan Banout, Ph.D.

Co-examiner: Ing. Klára Urbanová, Ph.D.

Related courses: *Renewable Energy for Food Processing*
Principles of Food Preservation

Main topics:

Description of renewable energy sources



Properties of solar energy and main atmospheric effects on incoming radiation
Classification of solar driers, ovens and cookers
Classification of biomass and biogas stoves
Description of solar cooling systems
Principles of food preservation; Postharvest physiology, handling and treatment
Preservation using heat - pasteurization, sterilization
Innovative techniques in food processing: thermal, non-thermal
Preservation by controlling water, chilling, freezing, using chemicals, using microbes
Packaging as a preservation technique
Hazard Analysis and Critical Control Point (HACCP) and Good Manufacturing Practice (GMP)

Social aspects of rural development

Corridor supervisor/ Leading examiner: Ing. Jana Mazancová, Ph.D.
Co-examiner: Ing. Kristina Rušarová, Ph.D.
Related courses: *Rural Communication and Extension*
Project management and planning

Main topics:

Sustainable livelihood concept
Development of extension services
Current trends in extension services in developing countries
Modern approaches to rural extension in developing countries
Methods for participatory situation analysis
Development cooperation
Preparation of the project – analysis of problems and stakeholders
Logical Framework – particular aspects and LogFrame design
Budget – particular aspects and Budget design
Modalities of development cooperation – tenders, grants, etc.
Aspects of development projects implementation and management
Risks for the development workers
Monitoring and reporting at the development projects
Evaluation – forms, purpose, methods