

**International Course Catalogue for Erasmus students
Centre for Agricultural and Applied Economic Sciences**

Several courses in the field of agronomy and agricultural economics are available in English and German languages. We can also offer individual consultation and examination possibilities in almost every department, as well as participation in research projects running currently at our institution in different scientific fields. The Centre for External Relations can help in finding the appropriate experts for consultation on projects designed to include international students. Courses offered are as follows:

• **FACULTY OF AGRICULTURAL AND FOOD SCIENCES AND ENVIRONMENTAL MANAGEMENT**

COURSE TITLE	SOIL CHEMISTRY	CODE	AFL001E
		Credits:	3
COORDINATOR	DR. MÁRIA CSUBÁK	Hours:	26
		Language:	ENGLISH
CONTENTS	Cation adsorption, soil acidity, acid-base buffer properties, humus chemistry		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	SOIL MICROBIOLOGY	CODE	AFL002E
		Credits:	3
COORDINATOR	DR. JÁNOS KÁTAI	Hours:	26
		Language:	ENGLISH
CONTENTS	The microbiota of soil, transformation of nitrogen compounds (ammonification, denitrification, non-symbiotic and symbiotic nitrogen fixation), transformation of carbon compounds (degradation of organic carbon compounds), transformation of sulfur compounds, microbial activity of soils		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	APPLIED SOIL SCIENCE	CODE	AFL003E
		Credits:	3
COORDINATOR	DR. ÁGNES OLÁH ZSUPOSNÉ	Hours:	26
		Language:	ENGLISH
CONTENTS	Soil degradation processes, Soil erosion, soil deflation, soil amelioration (methods of soil amelioration, amelioration of acidic soils, amelioration of alkaline soils), effects of irrigation on soil, soil pollution		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	SOIL GENETICS	CODE	AFL004E
		Credits:	3
COORDINATOR	DR. ÁGNES OLÁH ZSUPOSNÉ	Hours:	26
		Language:	ENGLISH
CONTENTS	WRB soil classification, Hungarian soil classification, main soil types and types found in Hungary		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	ENVIRONMENTAL SOIL BIOLOGY	CODE	AFL070E
		Credits:	3
COORDINATOR	DR. ÁGNES OLÁH ZSUPOSNÉ and DR: JÁNOS KÁTAI	Hours:	26
		Language:	ENGLISH
CONTENTS	Soil as a habitat for organisms, life in soil, biological processes in soil, environmental issue, biodiversity		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	INTEGRATED CROP MANAGEMENT	CODE	AFL005E
		Credits:	3
COORDINATOR	DR. PÉTER PEPÓ	Hours:	26
		Language:	ENGLISH
CONTENTS	Environmental risks of conventional crop production, the integrated adaptable crop production system, organic farming, biological crop production system		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	TEMPORATED CROP PRODUCTION	CODE	AFL007E
		Credits:	3
COORDINATOR	DR. JÓZSEF CSAJBÓK	Hours:	26
		Language:	ENGLISH
CONTENTS	The development of crop production in the world, Hungarian crop production in recent decades, natural resources of crop production, production technology of the important crops in Hungary (nutrient supply, crop rotation, soil cultivation, sowing, pest management, harvesting)		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	SUSTAINABLE CROP PRODUCTION IN HUNGARY	CODE	AFL054E
		Credits:	3
COORDINATOR	DR. PÉTER PEPÓ	Hours:	26
		Language:	ENGLISH
CONTENTS	Overview of development of Hungarian crop production in the last 5 decades. Periods, old and new issues. Arable land, yield of the most important crops. Agro ecological conditions, genotypes, crop management elements. Quality and its security. Environmental protection aspects. Sustainable development in the Hungarian crop production before and after the EU Accession.		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	SIMPLIESR METHODS OF UNDER FOIL EARLY VEGETAB PRODUCTION IN HUNGARY	CODE	
		Credits:	3
COORDINATOR	DR. SÁNDOR HODOSSY	Hours:	26
		Language:	ENGLISH
CONTENTS	Timing of under foil production, criteria for choosing the appropriate foil type, changes in the temperature and CO2 concentration if the air under foil compared to the outer environment, ways of ventilation and its frequency, methods of under foil early vegetable production in Hungary, production technologies of vegetables grown under foil in Hungary, field work, making plans of technology		
TEACHING METHOD	Lectures and practice		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	PLANT NUTRITION AND FERTILIZATION	CODE	AFL010E
		Credits:	3
COORDINATOR	DR. SZENDILLE KISS	Hours:	26
		Language:	ENGLISH
CONTENTS	The soil as a plant nutrient medium, nutrient uptake and assimilation, plant-water relationship, nutrition and plant growth, fertilizer application, essential plant nutrients, fertilizers, benefits of fertilizers to the environment, elements with more toxic effects		
LITERATURE	K. Mengel and E. A. Kirkby: Principles of plant nutrition: IPI, Bern, 1987		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	UMWELTCHEMIE	CODE	AFL011D
		Credits:	3
COORDINATOR	DR. IMRE VÁGÓ	Hours:	26
		Language:	DEUTSCH
CONTENTS	Chemie und Umweltchemie. Chemische Umwandlungsprozesse der Umwelt. Dynamik der ökologischen Systeme. Die Erde als Reaktionsraum, Energiebilanz der Erde. Geochemische Entwicklung der Erde, Bildung von Erze. Chemie der Evolution, Bildung von Biopolymere. Chemie der Litosphäre: Verwitterungsprozesse der Gesteine. Chemie der Hydrosphäre: Struktur und Eigenschaften des Wassers. Chemie der Atmosphäre. Zusammensetzung und Eigenschaften, Grundprinzipien der Photochemie der Atmosphäre. Luftverunreinigungen und ihre Ursachen. Schadstoffe in der Atmosphäre. Smog. Umweltchemie der Elemente. Transportprozesse und chemische Reaktionen in der Umwelt. Biochemischer Kreislauf der Elemente und die Wirkung der menschlichen Tätigkeit: C, O, N, P. Metalle in der Umwelt. Anthropogene organische Stoffe in der Umwelt. Wirkungen, Abbauprozesse: Kunststoffe, Pflanzenschutzmittel und Metabolismus, Lebensmittelreste, mineralische Öle und Ölderivate, halogenierte organische Verbindungen, polyaromatische Kohlenwasserstoffverbindungen.		
TEACHING METHOD	Vorlesungen und Praktika		
MODE OF ASSESSMENT	Schriftliche/mündliche Prüfung		

COURSE TITLE	UMWELTANALYTIK-THEORIE UND PRAXIS	CODE	AFL012D
		Credits:	3
COORDINATOR	DR. IMRE VÁGÓ	Hours:	26
		Language:	DEUTSCH
CONTENTS	Ziel und Art der chemischen Umweltanalyse, Leistungsfähigkeit und Struktur chemischer Analysenmethoden, Die Litosphäre, Die Hydrosphäre, Die Atmosphäre, Die Biosphäre, Nahrungsmittel		
TEACHING METHOD	Vorlesungen und Praktika		
MODE OF ASSESSMENT	Schriftliche/mündliche Prüfung		

COURSE TITLE	TAXONOMY OF AGRICULTURAL CROPS AND THEIR SPECIFIC WEEDS	CODE	AFL015E
PERIOD	APRIL-MAY	Credits:	3
COORDINATOR	DR. ZSUZSA TRÓCSÁNYINÉ KISS	Hours:	26
		Language:	ENGLISH
CONTENTS	Summary of morphological knowledge, Class: Monocotyledoneae, Family: Poaceae, cultivated species, weed species, Class: Dicotyledoneae several families		

TEACHING METHOD	Lectures and practices, field trips
MODE OF ASSESSMENT	2 written tests, oral exam

COURSE TITLE	MINERAL NUTRITION OF CROP PLANTS WITH SPECIAL ATTENTION TO SOIL LIFE	CODE	AFL071E
PERIOD	SEPT-DEC	Credits:	3
COORDINATOR	DR. LÁSZLÓ LÉVAI	Hours:	26
		Language:	ENGLISH
CONTENTS	Root reactions, uptake mechanisms, physiological role of nutrients, role of soil-born and injected bacteria on uptake and availability of nutrients		
TEACHING METHOD	Lectures and laboratory practices		
MODE OF ASSESSMENT	2 oral presentations, final oral exam		

COURSE TITLE	DEPENDENCE OF PLANT PRODUCTION ON THE CHANGES IN ENVIRONMENTAL FACTORS	CODE	AFL071E
PERIOD	SEPT-DEC	Credits:	3
COORDINATOR	DR. LÁSZLÓ LÉVAI	Hours:	26
		Language:	ENGLISH
CONTENTS	Root reactions, uptake mechanisms, physiological role of nutrients, role of soil-born and injected bacteria on uptake and availability of nutrients		
TEACHING METHOD	Lectures and laboratory practices		
MODE OF ASSESSMENT	2 oral presentations, final oral exam		

COURSE TITLE	THE USE OF ENDOSCOPIC METHODS IN SHEEP BREEDING	CODE	
COORDINATOR	DR . KÁROLY MAGYAR	Credits:	3
		Hours:	26
		Language:	ENGLISH
CONTENTS	Introduction of endoscopic equipments, theoretical background and the practical use of laparoscopy in sheep breeding, checking of ovulation rate in ewe, intrauterine insemination by endoscopy.		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	ENVIRONMENTALLY-FRIENDLY FARM MACHINERY	CODE	AFL021E
		Credits:	3
COORDINATOR	DR. ENDRE HARSÁNYI	Hours:	26
		Language:	ENGLISH
CONTENTS	Soil and environment protecting cultivating equipment, combined tillage machines, mechanization for supplement of plant nutrients, machinery of fertilization and manure spreading, the spinning disc type fertilizer spreader, technical conditions of precision fertilization, plant protection machines, examination of machines		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	THE FARM TRACTOR AND FARM MACHINERY	CODE	
		Credits:	3
COORDINATOR	DR. ZOLTAN HAGYMASSY	Hours:	26
		Language:	ENGLISH
CONTENTS	The 4-stroke diesel engine and the transmission system of the farm tractor. Clutch, gearbox, differential and brakes. Ploughs and cultivating equipment. Fertilizer distributors and machinery of manure spreading. Field crop sprayers. Harvesting equipment. Hay and silage making machines. The combine harvester.		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	CLIMATOLOGY	CODE	AFL022E
		Credits:	3
COORDINATOR	DR. LÁSZLÓ LAKATOS	Hours:	26
		Language:	ENGLISH
CONTENTS	Factors and elements of climate, Atmospheric characteristics, Climatic classifications, Climatic changes, IPCC reports, Influence of Broecker Conveyor on climate changes, Climate variation, The European climate, General circulation, mesoscale airflow, wind characteristics, The climate of Hungary, Impacts of mesoscale climate, Climatic trends and anomalies, El Nino occurrence, Urban climate, parameters of urban atmosphere, basis of human meteorology		
LITERATURE	Dobosi Z.-Felméry L.(1977): Climatology. Tankönyvkiadó Bp. Péczeli Gy. (1979): Climatology. Tankönyvkiadó Bp. Probáld F. (1974): Urban climate of Budapest. Akadémiai Kiadó Bp.		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	ENVIRONMENTAL METEOROLOGY	CODE	AFL023E
		Credits:	3
COORDINATOR	DR. LÁSZLÓ LAKATOS	Hours:	26
		Language:	ENGLISH
CONTENTS	Meteorological information and its usage in environmental protection, Atmospheric characteristics, Solar radiation, radiation lows, Exchange of heat and mass between the atmosphere and the surface, the greenhouse effect, General circulation, Mesoscale airflow, wind characteristics, Soil characteristics, heat management of the soils, Air temperature and its changes, Water in the air, its changes, related terms, Soil moisture, its changes, related terms, Urban climate, parameters of urban atmosphere, precipitation forms, types of evaporation, related terms, Bases of human meteorology, bases of air pollution meteorology		
LITERATURE	Szász, G.-Tőkei, L. (1997): Meteorology for agronomists, horticulturists, foresters. Mezőgazda Kiadó K. Grefen-J.Löbel (1987): Environmental Meteorology. Kluwer Academic Publishers Dobosi Z.- Felméry L. (1977): Climatology. Tankönyvkiadó Bp. Probáld F. (1974): Urban climate of Budapest. Akadémiai Kiadó Bp.		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	AGROMETEOROLOGY	CODE	AFL024E
		Credits:	3
COORDINATOR	DR. LÁSZLÓ LAKATOS	Hours:	26
		Language:	ENGLISH
CONTENTS	Agrometeorological information and its usage in agriculture, Atmospheric elements and their changes, Management and manipulation of climate, Agroclimatic characterization, Impacts of microclimate, Soil characteristics, heat and water management of soils, Air temperature and its changes, Water in the air, its changes, related terms Soil moisture, its changes, related terms, Management and analysis of agroclimate and agrometeorological data, Atmosphere-vegetation-soil interactions, Types of crop models, Crop requirements, temperate crops, From crop modelling to information systems for decision making		
LITERATURE	Griffiths J. (1994): Handbook of Agricultural meteorology. Oxford University Press. Szász, G.-Tőkei, L. (1997): Meteorology for agronomists, horticulturists, foresters. Mezőgazda Kiadó		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	WEED CONTROL IN AGRICULTURE	CODE	AFL037E
PERIOD	Spring semester	Credits:	3
COORDINATOR	DR. LÁSZLÓ RADÓCZ	Hours:	26
PREREQUISITES	Botany	Language:	ENGLISH
CONTENTS	Introduction to general weed biology Important weed species in Hungary and in Europe Integrated weed management		
TEACHING METHOD	Lectures and practices		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	FUNGAL TOXICOLOGY	CODE	AFL065E
PERIOD	Spring semester	Credits:	3
COORDINATOR	DR. LÁSZLÓ RADÓCZ	Hours:	26
PREREQUISITES		Language:	ENGLISH
CONTENTS	Introduction of the most frequent edible and poisonous fungi that can be found in Hungary. Description of the structure of their fruiting bodies and mycetism		
TEACHING METHOD	Lectures and practices		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	WEED ECOLOGY	CODE	AFL066E
PERIOD	Spring semester	Credits:	3
COORDINATOR	DR. LÁSZLÓ RADÓCZ	Hours:	26
PREREQUISITES	Botany	Language:	ENGLISH
CONTENTS	Introduction to major approaches used to study weed crop interference and treats weed and crop competition from resource limitation and physiological aspects		
TEACHING METHOD	Lectures and practices		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	INTEGRATED FOREST PROTECTION	CODE	AFL067E
PERIOD	Spring semester	Credits:	3
COORDINATOR	DR. LÁSZLÓ RADÓCZ	Hours:	26
		Language:	ENGLISH
CONTENTS	Introduction to major approaches used in forest protection. Integrated management of harmful pests and weeds in forest ecosystems		
TEACHING METHOD	Lectures and practices		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	PLANT DISEASE EPIDEMIOLOGY	CODE	
		Credits:	3
COORDINATOR	DR. IMRE HOLB	Hours:	26
		Language:	ENGLISH
CONTENTS	Introduction to plant epidemiology History of plant disease epidemiology Characterisation of disease spread Factors affecting plant disease spread Modelling plant disease in time and space Practical application of plant disease epidemiology		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	INTEGRATED FRUIT PROTECTION	CODE	
		Credits:	3
COORDINATOR	DR. IMRE HOLB	Hours:	26
		Language:	ENGLISH
PREREQUISITES	Phytopatology, entomology, weed science		
CONTENTS	Definition of forecasting, Classical methods of forecasting, Simulation in forecasting, Forecasting of poliphagus plant pest and diseases, Forecasting of pest and diseases of arable crops. Forecasting of pest and diseases of horticultural crops		
TEACHING METHOD	Lectures		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	FORECASTING IN PLANT PROTECTION	CODE	
		Credits:	3
COORDINATOR	DR. IMRE HOLB	Hours:	26
		Language:	ENGLISH
PREREQUISITES	Phytopatology, entomology, weed science		
CONTENTS	Definition of forecasting, Classical methods of forecasting, Simulation in forecasting, Forecasting of poliphagus plant pest and diseases, Forecasting of pest and diseases of arable crops. Forecasting of pest and diseases of horticultural crops		
TEACHING METHOD	Lectures		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	AGRICULTURAL MYCOLOGY	CODE	AFL045E
PERIOD	Spring semester	Credits:	3
COORDINATOR	DR. GYÖRGY KÖVICS	Hours:	26
PREREQUISITES	Botany, biochemistry	Language:	ENGLISH
CONTENTS	Introduction to mycology, Methods in Mycology: Isolation techniques and ecological groups of fungi, Microscopic examinations, Sub-microscopic techniques, The Fungal System, Divisions and Classes of Fungi		
TEACHING METHOD	Lectures and practices		
MODE OF ASSESSMENT	Oral exam		

COURSE TITLE	MYCOTAXONOMY	CODE	AFL046E
PERIOD	Spring semester	Credits:	3
COORDINATOR	DR. GYÖRGY KÖVICS	Hours:	26
PREREQUISITES	Plant Pathology	Language:	ENGLISH
CONTENTS	Introduction to mycotaxonomy. Protozoa (Acrasiomycota, Dictyosteliomycota, Myxomycota, Zygomycota, Plasmodiophoromycota), Chromistia (Hyphochytriomycota, zygomycota, Ascomycota, Basidiomycota, Mitosporic Fungi)		
TEACHING METHOD	Lectures and practices		
MODE OF ASSESSMENT	Oral exam		

COURSE TITLE	APPLICATIONS OF PCR IN MYCOLOGY	CODE	AFL063E
		Credits:	3
COORDINATOR	DR. ERZSÉBET M. KARAFFA	Hours:	26
PREREQUISITES	Microbiology, biochemistry	Language:	ENGLISH
CONTENTS	The basics of PCR cycling. Polymerase chain reaction in mycology. Real-time PCR. Gene cloning using PCR. DDRT-PCR for screening of fungal gene expression. Interpretation of PCR methods for species definition. Applications of PCR for studying the biodiversity of mycorrhizal fungi. PCR applications in fungal phylogeny. Application of PCR in fungal biotechnology. PCR methods for the detection of mycotoxin-producing fungi. PCR diagnostics in medical mycology. Applications of PCR in fungal-plant interactions. PCR as a tool for the investigation of seed-borne diseases		
TEACHING METHOD	Lectures		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	HUNGARIAN ANIMAL PRODUCTION SYSTEM	CODE	
		Credits:	3
COORDINATOR	DR. ISTVÁN KOMLÓSI	Hours:	26
		Language:	ENGLISH
CONTENTS	Main features of the Hungariyn Livestock Industry, forage production, processing, conservation; Feeding technology; Cattle breeds and their characteristics; Cattlet breeding, and breeding organization; Cattle farms and management; Pig breeds and their characteristics; Pig breeding and breeding structure; Pig farms and farm management; Sheep breeding and farm management, Poultry breeding and farm management; Meat and Milk processing.		
TEACHING METHOD	Lectures and practice		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	USE OF LIQUID CULTURE SYSTEMS IN PLANT TISSUE CULTURE	CODE	AFL061E
		Credits:	3
COORDINATOR	DR. MIKLÓS FÁRI	Hours:	26
		Language:	ENGLISH/ PORTUGUËS/ ESPANHOL
CONTENTS	The course will focus on the study of the most advanced plant tissue culture methods based on the application of liquid culture media. In the theoretical part, the course will survey and analyze the most important biological, technical and economic characteristics of the liquid culture systems in comparison with the traditional semi-solid methods. In addition, practical training will be involved with the experimental study of some economically important horticultural plants cultured in revert rotary bioreactor (3R System) designed recently in Hungary.		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	ENVIRONMENTAL AND FOOD TOXICOLOGY	CODE	MTMEC014
		Credits:	2
COORDINATOR	DR. JÓZSEF PROKISCH	Hours:	16
		Language:	ENGLISH
CONTENTS	The course provides the student with a background of major groups of toxic substances encountered by man and animals through the food and environment, and also through exposure at the workplace. These toxicants include metals, naturally occurring toxins, solvents, pesticides, pollutants and radiation (UV, electromagnetic, ionizing). The course focuses on the chemistry, fate and distribution in the food and environment, mechanisms of their actions, toxic manifestation in living organisms as well as toxic syndrome in human beings. after the theoretical part, the course is concluded with "case histories". These are actual, realistic and generally well known cases or scenarios (e.g. the fall of DDT, the Minimata Bay incident, the dioxin-food problem, etc.) and are used to		

	elucidate the particular topic.
LITERATURE	http://www.atsdr.cdc.gov/
TEACHING METHOD	Lecture
MODE OF ASSESSMENT	Written/oral exam

COURSE TITLE	PRODUCTION OF NANOPARTICLES BY BACTERIA	CODE	MTPCM21
		Credits:	4
COORDINATOR	DR. JÓZSEF PROKISCH	Hours:	32
		Language:	ENGLISH
CONTENTS	Introduction to a biotechnological procedure for producing selenium and tellurium nanoparticles with yogurt bacteria. Purification and extraction of nanoparticles, tests with electronmicroscope.		
TEACHING METHOD	Practice		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	DEVELOPMENT OF FUNCTIONAL FOODS	CODE	MTE0039
		Credits:	4
COORDINATOR	DR. JÓZSEF PROKISCH	Hours:	26
		Language:	ENGLISH
CONTENTS	This course prepares students to develop an innovative product or service from conceptualization to market entry considering regulatory, product development, safety/efficacy and market readiness issues. The course deals with the current status of technologies based on fruits and vegetables. The subject coverage will include post harvest storage, the parameters that determine quality, biochemical and molecular strategies for improving storage life and quality, processing technologies and issues related to genetic engineering, food safety, functional food ingredients and their health-regulatory function.		
TEACHING METHOD	Lecture and practice		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	ANALYTICAL CHEMISTRY	CODE	MTB0022
		Credits:	4
COORDINATOR	DR. JÓZSEF PROKISCH	Hours:	24
		Language:	ENGLISH
CONTENTS	The course combines lectures, which give a broad as well as a specific introduction to selenium speciation, with hands-on practice in the laboratory using HPLC hyphenated with AFS system. The course explains the biological and biochemical background to selenium speciation and will be conducted in an interactive manner between the lecturers and the participants.		

TEACHING METHOD	Lecture and practices
MODE OF ASSESSMENT	Written/oral exam

COURSE TITLE	MODERN METHODS OF FOOD ANALYSIS I. SPECTROSCOPY	CODE	
		Credits:	5
COORDINATOR	DR. BÉLA KOVÁCS	Hours:	52
		Language:	ENGLISH
CONTENTS	The course focuses on the instrumental (mainly spectroscopy) analytical methods and steps: methods of sampling and sample preparation (possible errors), general description of spectroscopic methods, flame emission spectroscopy, flame atomic absorption spectrometry, graphite furnace atomic absorption spectrometry, inductively coupled plasma optical emission spectrometry, inductively coupled plasma mass spectrometry, comparison and applicability of the above analytical methods.		
TEACHING METHOD	Lecture and practices		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	MICROBIOLOGICAL ASPECTS OF FOOD QUALITY AND SAFETY	CODE	
		Credits:	3
COORDINATOR	DR. ERZSÉBET KARAFFA	Hours:	26
		Language:	ENGLISH
CONTENTS	The aim is to give up to date knowledge about the food microbiology and hygiene. Students will learn about food materials as microbial habitat, the basis and characteristics of food preservation, the detailed of food spoilages and food born illness, moreover detection of microbes		
TEACHING METHOD	Lecture and practices		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	APPLICATIONS OF PCR MYCOLOGY	CODE	
		Credits:	3
COORDINATOR	DR. ERZSÉBET KARAFFA	Hours:	26
		Language:	ENGLISH
CONTENTS	Polymerase chain reaction in mycology. Gene cloning using PCR. DDRT-PCR for screening of fungal gene expression. Interpretation of PCR methods for species definition. Applications of PCR for studying the biodiversity of mycorrhizal fungi. PCR Applications in fungal phylogeny. Applications of PCR in fungal biotechnology. Applications of PCR in studying lignocellulose degradation by Basidiomycetes. PCR methods for the detection of mycotoxin-		

	producing fungi. PCR diagnostics in medical mycology. Applications of PCR in fungal-plant interactions. PCR as a tool for the investigation of seed-borne diseases.
TEACHING METHOD	Lecture and practices
MODE OF ASSESSMENT	Written/oral exam

COURSE TITLE	QUALITY MANAGEMENT SYSTEMS	CODE	
		Credits:	3
COORDINATOR	DR. FERENC PELES	Hours:	26
		Language:	ENGLISH
CONTENTS	Concept and importance of quality, historical background, concepts and basics of quality assurance, good practices, HACCP, ISO standards, TQM, quality awards, accreditation and certification.		
TEACHING METHOD	Lecture and practices		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	PRODUCT QUALITY	CODE	
		Credits:	2
COORDINATOR	DR. PÉTER SIPOS	Hours:	26
		Language:	ENGLISH
CONTENTS	Concept and importance of quality, historical background, concepts and basics of quality assurance, good practices, HACCP, ISO standards, TQM, quality awards, accreditation and certification. Aims, principles and levels of products grading and quality certification. Principles of sampling of different agricultural products. Sensory and physical quality evaluations. Methods for the determination of chemical components of agricultural products. Microbiological analysis of agricultural products Requirements for cereals and their products. Requirements for industrial crops, fruits and vegetables, meat, milk and eggs. Systems for products grading and quality certification laboratories.		
TEACHING METHOD	Lecture and practices		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	RHEOLOGIC FOOD ANALYSIS	CODE	
		Credits:	2
COORDINATOR	DR. PÉTER SIPOS DR. BORBÉLYNÉ VARGA MÁRIA	Hours:	26
		Language:	ENGLISH
CONTENTS	Concept and importance of quality, historical background, concepts and basics of quality assurance, good practices, HACCP, ISO standards, TQM, quality awards, accreditation and certification. Aims, principles and levels of products grading and quality certification. Principles of sampling of different agricultural products. Sensory and physical quality		

	<p>evaluations. Methods for the determination of chemical components of agricultural products. Microbiological analysis of agricultural products</p> <p>Requirements for cereals and their products. Requirements for industrial crops, fruits and vegetables, meat, milk and eggs. Systems for products grading and quality certification laboratories.</p>
TEACHING METHOD	Lecture and practices
MODE OF ASSESSMENT	Written/oral exam

COURSE TITLE	PRECISION LIVESTOCK NUTRITION	CODE	MTMAE042
		Credits:	6
COORDINATOR	DR. LÁSZLÓ BABINSZKY	Hours:	39
		Language:	ENGLISH
CONTENTS	<p>Precision nutrition is one of the newest and most dynamically evolving fields of animal nutrition. The concept was developed in the USA.</p> <p>By applying precision nutrition, the farm animals (i.e. primarily cattle, sheep, pig, poultry) are fed so that their nutrient requirements are met with the maximum possible precision, ensuring thereby the most efficient and safest production of animal products, the best product quality (meat, milk, eggs, etc.) and at the same time the lowest level of environmental pollution. The concept is based on information technology and extensive international databases; hence, the term "information intensive nutrition" can also be used.</p> <p>Its more important fields are: review of the most recent requirement levels by species, age groups and categories; factors influencing the requirements; interactions between nutrients and minerals and vitamins; determining the requirements and predicting the product quality using mathematical programs (models); the potential for reducing N, P and CH₄ excretion using various feeding systems and technologies. Upon the completion of this subject the students gain comprehensive knowledge about the relationship between animal nutrition and information technology; about the complex issues of meeting nutrient requirements, product quality and environmental pollution by animal species; and it contributes to establishing the product chain approach of the students.</p>		
TEACHING METHOD	Lectures		
MODE OF ASSESSMENT	Written/oral exam		

• FACULTY OF APPLIED ECONOMICS AND RURAL DEVELOPMENT

COURSE TITLE	OPERATIONS MANAGEMENT	CODE	AFL008E
		Credits:	3
COORDINATOR	DR. MIKLÓS PAKURÁR	Hours:	26
		Language:	ENGLISH
CONTENTS	Introduction to Operations Management, Operations Strategy, Products and Services, Processes and Technologies, Facilities, Project Management, Supply Chain Management, Forecasting, Capacity and Aggregate Planning, Inventory Management, Just in Time and Lean Production, Enterprise Resource Planning, Scheduling, Quality Management, Human Resources in Operations Management		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	FÖRDERUNGEN IN DER UNGARISCHEN LANDWIRTSCHAFT	CODE	AFL014D
		Credits:	3
COORDINATOR	DR. ÉVA DARABOS	Hours:	26
		Language:	DEUTSCH
CONTENTS	Agrarpolitik, Lage der ungarischen Landwirtschaft, Rolle der Förderungen in Landwirtschaft, Die Förderungsformen, Entwicklungschancen in der Landwirtschaft, Zukunftsprogram für den ländlichen Raum, EU-Anschluß, Harmonisierungsprozesse		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	CORPORATE FINANCE	CODE	AFL055E
		Credits:	3
COORDINATOR	DR. ILDIKÓ ORBÁN	Hours:	26
		Language:	ENGLISH
CONTENTS	Characteristics of business organizations, financing problems and questions, planning, financial statements, taxes, analysing techniques		
TEACHING METHOD	Lectures and practical, field trips		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	RURAL DEVELOPMENT ON THE GREAT	CODE	AV_ERASMUS_GVK02
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	HUNGARIAN PLAIN	Credits:	3
COORDINATOR	DR. JÁNOS LAZÁNYI	Hours:	26
		Language:	ENGLISH
		Rural restructuring, rural development in global perspective, economic development, business development, rural community development, rural tourism, sustainability in rural development	
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	AGRICULTURAL RESEARCH AND TECHNOLOGY TRANSFER	CODE	AFL019E
		Credits:	3
		DR. JÁNOS LAZÁNYI	
COORDINATOR		Hours:	26
		Language:	ENGLISH
		Review of historical and contemporary economic theories related to resource management. The aspects of economic development: business development, workforce development, physical and social infrastructure	
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	INTERNATIONAL MARKETING	CODE	AFL025E
		Credits:	3
		DR. ZSOLT CSAPÓ	
COORDINATOR		Hours:	26
		Language:	ENGLISH
		Starting international marketing steps, Marketing elements of international transactions	
LITERATURE	Michael R. Czinkota, Ilka A. Ronkainen: International Marketing. Sixth Edition Harcourt College Publishers, 2001.		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written exam		

COURSE TITLE	MARKETING MANAGEMENT	CODE	AFL026E
		Credits:	3
		DR. ZSOLT CSAPÓ	
COORDINATOR		Hours:	26
		Language:	ENGLISH
		Basic principles of marketing management, Exploring marketing opportunities, Marketing strategy, Decision making in marketing, Managing marketing programs	

LITERATURE	Philip Kotler: Marketing Management. The Millenium Edition. Prentice Hall International Inc., 2000
TEACHING METHOD	Lectures and practical
MODE OF ASSESSMENT	Written exam

COURSE TITLE	FARM BUSINESS MANAGEMENT	CODE	AFL027E
		Credits:	3
COORDINATOR	DR. ANDRÁS NÁBRÁDI	Hours:	26
		Language:	ENGLISH
CONTENTS	Basics of farm business management, Types of enterprises, Production value, cost of production, Efficiency and its measurement, Production and services, The internal and external relations of enterprise. Sectoral economics, Planning, Analysis.		
TEACHING METHOD	Lectures, practical		
MODE OF ASSESSMENT	Continuous assessment, oral exams		

COURSE TITLE	INFORMATION TECHNOLOGY IN AGRICULTURE	CODE	AFL027E
		Credits:	3
COORDINATOR	DR. MIKLÓS HERDON	Hours:	26
		Language:	ENGLISH
CONTENTS	Review of uses for computers and basic knowledge of computer networks. Information technology and applications in agriculture		
TEACHING METHOD	Lectures and practices		
MODE OF ASSESSMENT	Written/oral exams		

COURSE TITLE	ARTIFICIAL INTELLIGENCE, EXPERT SYSTEMS AND THEIR APPLICATION POSSIBILITIES IN AGRICULTURE	CODE	AFL052E
		Credits:	3
COORDINATOR	DR. PÉTER SALGA	Hours:	26
		Language:	ENGLISH
CONTENTS	An introduction to artificial intelligence tools, e.g. neural networks, fuzzy logic, genetic algorithms, multi-agent systems. Theory and practical demonstration of modern expert systems and their business applications with focus on agriculture.		
TEACHING METHOD	Lectures and practices		
MODE OF ASSESSMENT	Written/oral exam		

ASSESSMENT	
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COURSE TITLE	COMMUNICATION NETWORKS	CODE	AFL052E
		Credits:	3
COORDINATOR	DR. MIKLÓS HERDON	Hours:	26
		Language:	ENGLISH
CONTENTS	Students learn the modern methods and tools of information communication. Technology. Devices of the wire and wireless telephone and data networks.		
TEACHING METHOD	Lectures and practices		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	STATISTICS	CODE	AFL052E
		Credits:	3
COORDINATOR	DR. PÉTER BALOGH	Hours:	26
		Language:	ENGLISH
CONTENTS	Agricultural and business statistics Introduction to statistics Statistics from population and processes Probability distributions Normal probability distributions Estimates and sample sizes Testing hypotheses Statistical quality control Inferences from two samples Multinomial experiments and contingency tables Analysis of variance Linear regression and correlation Multiple regression Time series Nonparametric statistics Decision analysis		
TEACHING METHOD	Lectures and practices		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	OPERATIONS RESEARCH	CODE	
PERIOD		Credits:	3
COORDINATOR	DR. LAJOS NAGY	Hours:	26
		Language:	English

CONTENTS	<p>Elements of operations research</p> <p>Linear programming, the simplex method</p> <p>The linear programming model</p> <p>The duality and sensitivity analysis</p> <p>Models solvable by the simplex method</p> <p>Application of linear programming in agricultural businesses LP models for animal husbandry (animal stock structure, formulation of feed-mixes and daily diet of animals)</p> <p>Models for crop production</p> <p>Complex farm models</p>
TEACHING METHOD	Lectures and practices
MODE OF ASSESSMENT	Written exam

COURSE TITLE	AGRICULTURAL AND ENVIRONMENTAL POLICY IN THE EU	CODE	
PERIOD		Credits:	3
COORDINATOR	DR. JUDIT KATONA KOVÁCS	Hours:	26
		Language:	English
CONTENTS	<p>History and development of the European Integration.</p> <p>Establishment of the common Agricultural Policy.</p> <p>Development of the Community Environmental Policy.</p> <p>Integration of Environmental Policy CAP</p>		
TEACHING METHOD	Lectures and discussions		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	ENVIRONMENTAL POLICY	CODE	
PERIOD		Credits:	2
COORDINATOR	DR. ANDREA GÁTHY	Hours:	26
		Language:	English
CONTENTS	<p>The primary objective of this course is to introduce the main concepts and tools of Ecological and Environmental Economics, and highlights the important role of policy (General Policy Design, National Strategy for Sustainable Development)</p>		
TEACHING METHOD	Lectures and discussions		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	MICROECONOMICS	CODE	
PERIOD		Credits:	2
COORDINATOR	DR. ANDREA GÁTHY	Hours:	26
		Language:	English

CONTENTS	The main objective of the course is to get the mastery of the main definition and basic knowledge of Microeconomics (the market, supply, demand, market failure) and form an economic view; lay the foundation of Applied Sciences.
TEACHING METHOD	Lectures and discussions
MODE OF ASSESSMENT	Written/oral exam

COURSE TITLE	ENVIRONMENTAL ECONOMICS	CODE	
PERIOD		Credits:	2
COORDINATOR	DR. ISTVÁN KUTI	Hours:	26
		Language:	English
CONTENTS	The primary objective of this course is to introduce the main concepts and tools of Ecological and Environmental Economics. The exciting transdiscipline, Ecological Economics provides a context for understanding the strengths and weaknesses of the more conventional Environmental and Resource Economics places more emphasis on the central role of the market and focuses primarily on efficient allocation		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	MOBILE INTERNET IN AGRICULTURE	CODE	
PERIOD		Credits:	2
COORDINATOR	DR. RÓBERT SZILÁGYI	Hours:	26
		Language:	English
CONTENTS	Students learn the methods and tools of wireless internet technology, devices and application. Main topics: mobile devices, wireless communication and application trends.		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	SOFTWARE DEVELOPMENT	CODE	
PERIOD		Credits:	2
COORDINATOR	DR. LÁSZLÓ VÁRALLYAI	Hours:	26
		Language:	English
CONTENTS	Students learn the methods and tools of a modern software development framework. Main topics: object oriented methods, software developing environment, main components, variables and algorithms. The developer framework can be Delphi, Visual Basic or Visual C#.		

TEACHING METHOD	Lectures and practical
MODE OF ASSESSMENT	Written/oral exam

COURSE TITLE	INTERNET TECHNOLOGIES	CODE	
PERIOD		Credits:	2
COORDINATOR	DR. LÁSZLÓ VÁRALLYAI	Hours:	26
		Language:	English
CONTENTS	Students learn the development of Internet technology – focusing the Web 2.0. and how to develop client and server side Internet-based applications under GNU/GPL license.		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	SUSTAINABILITY AND TOURISM	CODE	
PERIOD		Credits:	3
COORDINATOR	DR. KATALIN VARGÁNE CSOBÁN	Hours:	26
		Language:	English
PREREQUISITES			
CONTENTS	The course focuses on the principles and practices of sustainable tourism within the wider context of sustainable development. It aims to provide students with an understanding of positive and negative impacts of tourism, the importance of planning and managing tourism, as well as the responsibility of the different stakeholders in sustainable tourism development.		
TEACHING METHOD	Lectures and practical seminars		
MODE OF ASSESSMENT	Written exam		

COURSE TITLE	RURAL DEVELOPMENT ON THE GREAT HUNGARIAN PLAIN	CODE	
PERIOD		Credits:	3
COORDINATOR	DR. JÁNOS LAZÁNYI	Hours:	26
		Language:	English
PREREQUISITES			

CONTENTS	Rural restructuring, rural development in global perspective, economic development, business development, rural community development, rural tourism, sustainability in rural development.
TEACHING METHOD	Lectures and practical seminars
MODE OF ASSESSMENT	Written/oral exam

COURSE TITLE	EUROPEAN FOREIGN POLICIES	CODE	AV_ERAS MUS_GVK0 3
PERIOD		Credits:	3
COORDINATOR	DR. MIHÁLY FÜLÖP	Hours:	26
		Language:	English
PREREQUISITES	-		
CONTENTS	The Paneuropean idea, NATO, the French-German reconciliation and the first enlargements of the Common Market (European Communities), EFTA. The access of East-Central European states to the West. Enlargement versus deepening of the European integration. The institutional debate. "Small" states. The EU and the World in the 21st century. "Great Powers", G 8, G14, G20 and the rest.		
TEACHING METHOD	Lectures and practical		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	MANAGEMENT OF TOURISM ENTERPRISES	CODE	
PERIOD		Credits:	3
COORDINATOR	KRISZTINA KORMOSNÉ KOCH, PHD; ERIKA KÖNYVES, PHD	Hours:	26
		Language:	English
PREREQUISITES	-		
CONTENTS	The definition of tourism enterprise, categories by size, profile, ownership, and other categorizing factors; natural, social and economic environment of tourism enterprises, strategic and operational planning of tourism enterprises, the methods of decision making. Marketing questions in tourism enterprises; Financing the operation, the role of the EU and the National level grants in financing; the factors of competitiveness.		
TEACHING METHOD	Lectures and practical seminars		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	HOTEL MANAGEMENT	CODE	AV_ERAS MUS_GVK0 5
PERIOD		Credits:	3
COORDINATOR	DR. GÁBOR HEVESSY	Hours:	26
		Language:	English
PREREQUISITES	-		
CONTENTS	Introduction to hotel management and hotel industry, various management issues, hotel organization structure. Front Office, Housekeeping, Engineering and Security, Marketing, Recreation, Accounting, Human Resources, Food and Beverage departments and operations. Computer applications and softwares, statistics in hotel management.		
TEACHING METHOD	Lectures and practical seminars		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	HOTEL TRENDS	CODE	AV_ERAS MUS_GVK0 6
PERIOD		Credits:	3
COORDINATOR	DR. GÁBOR HEVESSY	Hours:	26
		Language:	English
PREREQUISITES	-		
CONTENTS	Types of hotels, major hotel brands, changing services, changing guests, changing technology, changing markets, short-, medium- and long-term drivers, globalisation, importance of new applications, revenue management, customer relationship management, loyalty programs, online booking and hotel website trends.		
TEACHING METHOD	Lectures and practical seminars		
MODE OF ASSESSMENT	Written/oral exam		

COURSE TITLE	DISTINCTIVENESS OF HUNGARIAN GASTRONOMY	CODE	AV_ERAS MUS_GVK0 8
PERIOD		Credits:	3
COORDINATOR	DR. KRISZTINA KOCH- KORMOS	Hours:	26
		Language:	English
PREREQUISITES	-		

CONTENTS	The origins and development of Hungarian gastronomy, its historical background, distinctiveness and international influences, eating
TEACHING METHOD	Lectures and practical seminars
MODE OF ASSESSMENT	Written/oral exam

COURSE TITLE	HUNGARIAN COOKING SCHOOL	CODE	
PERIOD		Credits:	3
COORDINATOR	DR. KRISZTINA KOCH-KORMOS	Hours:	26
		Language:	English
PREREQUISITES	-		
CONTENTS	The basics of the Hungarian kitchen; cooking; baking in interactive atmosphere; practical education of preparing some popular Hungarian dishes: starters/soups (pen cake ala Horotbágy, Hungarian fish soup), meat courses (eg. Goulash), dessert (eg. Strudel)		
TEACHING METHOD	practical seminars		
MODE OF ASSESSMENT	Written/oral exam		

4.1. Hungarian language course

Since 1927, the University has operated the Summer School, offering for example courses in Hungarian to interested guests and exchange students from around the world. The Summer School in Debrecen is the oldest such programme in the country. The Erasmus students of the Centre can attend the Hungarian courses organized during the semesters if they pay the fee of the course.

Information: debrecen@nyariegyetem.hu, Tel: +36-52-532-594

5. Comparison between the Hungarian grading scale and the ECTS

ECTS grades	Excellent	Pass with distinction	Pass			Fail
	A	B	C	D	E	F
Hungarian grades	Excellent	Good	Medium	Pass		Fail
	5	4	3	2	1	

6. Academic calendar

- the first semester starts on the first or second Monday of September and ends at the middle of December
- the examination term for the first semester is between the middle of December and the last week of January
- the second semester starts on the first Monday of February and ends at the middle of May
- the examination term for the second semester starts at the end of May and ends at the end of June

