

**BULLETIN**

**UNIVERSITY OF DEBRECEN**

**ACADEMIC YEAR 2015/2016**

**Faculty of Agricultural and Food Sciences and  
Environmental Management**

**AGRICULTURAL ENGINEERING MSc**

Coordinating Center for International Education



# Table of Contents

UNIVERSITY OF DEBRECEN.....	4
DEAN'S WELCOME.....	5
HISTORY OF THE FACULTY.....	6
MISSION OF THE FACULTY.....	7
THE ORGANIZATIONAL STRUCTURE OF THE UNIVERSITY.....	8
THE DEPARTMENTS OF THE FACULTY.....	9
UNIVERSITY CALENDAR.....	16
AGRICULTURAL ENGINEERING MSC PROGRAMME.....	17
CURRICULUM OF THE FULL TIME PROGRAMME.....	19
COURSE DESCRIPTIONS.....	25

## CHAPTER 1 UNIVERSITY OF DEBRECEN

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**Date of Foundation:** 1912 Hungarian Royal University of Sciences 2000 University of Debrecen

**Legal predecessors:** Debrecen University of Agricultural Sciences Debrecen Medical University Wargha István College of Education, Hajdúböszörmény Kossuth Lajos University of Arts and Sciences

**Legal status of the University of Debrecen:** state university

**Founder of the University of Debrecen:** Hungarian State Parliament

**Supervisory body of the University of Debrecen:** Ministry of Education

**Accreditation dates and statute numbers:** Debrecen University of Agricultural Sciences: 17 December 1996, MAB/1996/10/II/1. Debrecen Medical University: 5 July 1996, OAB/1996/6/II/6 Wargha István College of Education, Hajdúböszörmény: 5 July 1996, OAB/1996/6/II/2 Kossuth Lajos University of Arts and Sciences: 5 July 1996, OAB/1996/6/II.5. University of Debrecen: 3 October 2012, MAB/2012/8/VI/2.

**Number of Faculties at the University of Debrecen:** 14

- Faculty of Law
- Faculty of Medicine
- Faculty of Humanities
- Faculty of Health
- Faculty of Dentistry
- Faculty of Economics and Business (before 1 August 2014 the predecessors of the Faculty were the Faculty of Applied Economics and Rural Development and the Faculty of Economics and Business Administration)
- Faculty of Child and Adult Education
- Faculty of Pharmacy
- Faculty of Informatics
- Faculty of Agricultural and Food Sciences and Environmental Management (before 1 March 2010 the name of the Faculty was the Faculty of Agriculture)
- Faculty of Engineering
- Faculty of Public Health
- Faculty of Sciences and Technology
- Faculty of Music

*Number of accredited programmes at the University of Debrecen:* 73 degree programmes with the pre-Bologna 5-year-system university education, 41 supplementary degree programmes offering transfer-degree continuation of studies towards the university degree (MSc), 50 degree programmes with the pre-Bologna 3-year-system college education, 67 BSc and 78 MSc programmes according to the Bologna system, 5 unified one-cycle linear training programmes, 35 specializations offering post-secondary vocational certificates and 159 vocational programmes.

**Number of students at the University of Debrecen:** 28812

according to time of studies: 22888 full-time students, 5899 part-time students having corresponding classes and 25 part-time students having evening classes or distance education according to education level: 944 students at post-secondary vocational level, 17406 students at BSc, 3112 students at MSc, 21 students at college level, 190 students at university level (MSc), 5320 students at one-cycle linear training, 954 students at vocational programmes, 865 students at PhD, 3741 foreign students.

*Full time teachers of the University of Debrecen:* 1421

194 full college/university professors and 1055 lecturers with a PhD.

## CHAPTER 2

### DEAN'S WELCOME

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Thank you for your interest in our university with a great past and in our agricultural higher education with approximately 150 year old traditions.

The University of Debrecen is one of the institutions offering a wide range of courses and research activities in Hungary. As one of the most significant think tanks in the country and the knowledge centre of the region, we seek to provide unprecedented opportunities for our students to gain state-of-the-art knowledge and to carry out significant activities.

With excellent infrastructure and high level education, the Faculty of Agricultural and Food Sciences and Environmental Management ensures excellent facilities for its students. In addition to gaining in-depth modern experience, a wide range of opportunities are available to perform professional and scientific activities beyond the scope of academic studies. After obtaining their certificates in higher education vocational training and BSc diploma courses, our students acquire a thorough practical knowledge, they can continue their studies in MSc training and then the best ones in Ph.D. training.

We firmly believe that the variety of trainings and courses we offer are attractive to many students who choose the Faculty of Agricultural and Food Sciences and Environmental Management for academic education.

I wish you every success in your studies and hope to meet you personally in the near future.

*Prof. Dr. István Komlósi*  
Dean

## CHAPTER 3 HISTORY OF THE FACULTY

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### **History of the Faculty**

Agricultural higher education in Debrecen started in 1868 with the foundation of the National Higher Economic School of Debrecen. This date marks the beginning of agricultural higher education in Debrecen and East Hungary. Between 1876 and 1906 the institute's official name was Secondary Economic School. Then it was run under the name Hungarian Royal Academy of Economy until 1944. Between 1944 and 1949 our institute went on with its work as the Debrecen Department of the Agricultural Sciences at the Hungarian Agricultural University. In 1953 tuition began again at the Agricultural Academy. Training of professionals reached University level between 1962 and 1970 at the Agricultural College. Between 1970 and 1999 the institute got its university title and as the Agricultural University of Debrecen it operated with two branch faculties (Szarvas, earlier Hódmezővásárhely, later Mezőtúr).

The University of Debrecen was established with 5 university-, three college faculties and three research institutes on 1<sup>st</sup> January, 2000. In 2002 the Faculty of Agriculture and Rural Development was established, and by 2006, the university had comprised 15 faculties.

## **CHAPTER 4**

### **MISSION OF THE FACULTY**

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#### Mission of the Faculty

The mission of the Faculty of Agricultural and Food Sciences and Environmental Management is the multifunctional development of agriculture and rural development in the North Great Plain Region. Accordingly, the institution deals with regional, national and international research and consultancy, as well as the primary goal of training professionals within the Center for Agricultural and Applied Economic Sciences. Our spectrum of educational, training and research areas have broadened, in compliance with the demands of sustainable agricultural and rural development. The interconnection between the branches of science is strengthening, which is desirable both in the long and the short terms. Our aspiration can be used as a motto, as well: "diverse training and mobility".

Our Faculty provides all the personal and infrastructural conditions of linear training. The structure of our educational programs is flexible and provides students with diverse course contents.

Our accredited laboratories provide us with the opportunity to impact sectors of the economy in such a way that these can meet the ever-changing demands on markets. Our purpose is to create high-standard student and research laboratories and to provide the conditions for special high-value machines and measurement processes.

The doctoral schools and doctoral programs operating at the Faculty have an ever-widening base - providing talented young people with a suitable environment for scientific development.

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**CHAPTER 5**  
**THE ORGANIZATIONAL STRUCTURE OF THE UNIVERSITY**

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RECTOR OF THE UNIVERSITY OF DEBRECEN

Rector: Zoltán Szilvássy M.D., Ph.D, D.Sc.  
Address: 4032 Debrecen, Egyetem tér 1.  
Phone: +36-52-412-060  
Phone/Fax: +36-52-416-490  
E-mail: rector@unideb.hu

FACULTY OF AGRICULTURAL AND FOOD SCIENCES AND ENVIRONMENTAL  
MANAGEMENT

Dean: Prof. Dr. habil. István Komlósi  
Address: 4032 Debrecen, Böszörményi út 138.  
Phone: +36-52/508-412; 88438  
Fax: +36-52/486-292  
E-mail: komlosi@agr.unideb.hu

Vice Dean for Educational Affairs: Dr. habil. Csaba Juhász  
Address: 4032 Debrecen, Böszörményi út 138.  
Phone: +36-52/508-454 88454  
Fax: +36-52/508-454 88454  
E-mail: juhasz@agr.unideb.hu

Vice Dean of Scientific Affairs: Dr. László Stündl  
Address: 4032 Debrecen, Böszörményi út 138.  
Phone: +36-52/508-444 88226  
Fax: +36-52/486-292  
E-mail: stundl@agr.unideb.hu

DEAN'S OFFICE

Head of Dean's Office: Dr. Mrs. Julianna Fricz Mocsári  
Address: 4032 Debrecen, Böszörményi út 138.  
Phone/Fax: +36-52/508-412, +36-52/508-489  
E-mail: friczj@agr.unideb.hu

REGISTRAR'S OFFICE

Registrar: Dr. Mrs. István Kovács  
Address: 4032 Debrecen, Böszörményi út 138.  
Phone/Fax: +36-52/508-409, +36-52/508-317  
E-mail: ktunde@agr.unideb.hu

Officers  
Mrs. Gizella Kerekes Guthy  
Mrs. Mónika Bátori Pintye  
Ms. Zsuzsanna Házi  
László Lévai



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**CHAPTER 6**  
**THE DEPARTMENTS OF THE FACULTY**

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**INSTITUTE OF AGRICULTURAL CHEMISTRY AND SOIL SCIENCE**

Böszörményi út 138., Debrecen, 4032

Full Professor, Head of Institute	János Kátai C.Sc.
Associate Professor	Ms. Andrea Balláné Kovács Ph.D. Ms. Mária Micskeiné Csubák C.Sc. Imre Vágó C.Sc.
Assistant Professor	Ms. Rita Erdei Kremper Ph.D. Ms. Sándorné Kincses Ph.D. Zsolt Sándor Ph.D.
Secretary	Ms. Gizella Szász
Research Assistant	Ms. Magdolna Tállai Ph.D.

**INSTITUTE OF ANIMAL SCIENCE, BIOTECHNOLOGY AND NATURE  
CONSERVATION**

Böszörményi út 138., Debrecen, 4032

Full Professor, Head of Institute	István Komlósi D.Sc.
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**Department of Animal Husbandry**

Böszörményi út 138., Debrecen, 4032

Full Professor, Dean, Head of Department	István Komlósi D.Sc.
Professor Emeritus	Imre Bodó D.Sc. Sándor Mihók C.Sc.
Professor	János Gundel C.Sc.
Technical Assistant	Ms. Beáta Babka Ms. Gabriella Gulyás Attila Sztrik
Associate Professor	Béla Béri C.Sc. Károly Magyar C.Sc. Ms. Gabriella Novotniné Dankó Ph.D. József Prokisch Ph.D. László Stündl Ph.D.

## CHAPTER 6

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Assistant Lecturer	Ms. Nóra Pálfyné Vass Ph.D.
Assistant Professor	Péter Bársony Ph.D. Levente Czeglédi Ph.D.
	Ms. Anna Pécsi Ph.D. János Posta Ph.D.
Secretary	Sándor Boros Ms. Ágnes Gere Ms. Károlyné Kiss Ms. Marianna Korcsmárosné Varga Ms. Anikó Nagy

### **Department of Nature Conservation, Zoology and Game Management** Böszörményi út 138., Debrecen, 4032

Head of Department	Lajos Juhász Ph.D.
Assistant Research Fellow	László Kövér Ph.D.
Professor	Károly Rédei D.Sc.
Technical Assistant	Norbert Tóth
Assistant Professor	Péter Gyüre Ph.D. Lajos Kozák Ph.D. László Szendrei Ph.D.

### **Department of Animal Nutrition and Food Biotechnology** Böszörményi út 138., Debrecen, 4032

Head of Department	László Babinszky Ph.D.
Associate Professor	Csaba Szabó Ph.D.
Senior Lecturer	Ms. Judit Gálné Remenyik Ph.D.

### **Animal Genetics Laboratory** Böszörményi út 138., Debrecen, 4032

Head of Department	András Jávora C.Sc.
Professor	András Kovács D.Sc.
Assistant Lecturer	Ms. Zsófia Rózsáné Várszegi Ph.D.
Senior Research Fellow	Ms. Szilvia Kusza Ph.D.

**INSTITUTE OF FOOD SCIENCE**

Böszörményi út 138., Debrecen, 4032

Full Professor, Head of Institute	Béla Kovács Ph.D.
Professor	János Csapó D.Sc.
Technical Assistant	Ms. Éva Bacskainé Bódi
	Ms. Andrea Tóthné Bogárdi
Associate Professor	Ms. Erzsébet Karaffa Ph.D.
	Péter Sipos Ph.D.
Assistant Lecturer	Ms. Diána Ungai Ph.D.
Assistant Professor	Ms. Nikolett Czipa Ph.D.
	Ferenc Peles Ph.D.
Secretary	Ms. Tünde Simon

**INSTITUTE FOR LAND UTILISATION, TECHNOLOGY AND REGIONAL DEVELOPMENT**

Böszörményi út 138., Debrecen, 4032

Head of Institute	János Nagy D.Sc.
Professor	Béla Baranyi D.Sc.
	Gyula Horváth D.Sc.
Associate Professor	Zoltán Hagymássy Ph.D.
	Endre Harsányi Ph.D.
	Tamás Rátonyi Ph.D.
Assistant Professor	Imre Andorkó Ph.D.
	Ms. Adrienn Széles Ph.D.
	András Vántus Ph.D.
Senior Research Fellow	Attila Csaba Dobos Ph.D.
Secretary	Ms. Zsuzsanna Dorogi
	Ms. Sándorné Széles

**INSTITUTE OF HORTICULTURE**

Böszörményi út 138., Debrecen, 4032

Head of Institute	Imre Holb D.Sc.
Assistant Research Fellow	Ferenc Abonyi
Associate Professor	Ms. Mária Takácsné Hájos C.Sc.

## CHAPTER 6

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Assistant Lecturer	Ádám Csihon
	Péter Dremák Ph.D.
Assistant Professor	Nándor Rakonczás Ph.D.
Secretary	Ms. Andrea Gátiné Laskai

### **INSTITUTE OF CROP SCIENCES** Böszörményi út 138., Debrecen, 4032

Head of the Institute	Péter Pepó D.Sc.
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### **Department of Landscape Ecology** Böszörményi út 138., Debrecen, 4032

Head of Institute	Péter Pepó D.Sc.
Professor	Mihály Sárvári D.Sc.
Associate Professor	József Csajbók Ph.D.
Assistant Lecturer	Ms. Adrienn Novák Ph.D.
	Ms. Enikő Vári Ph.D.
Assistant Professor	Lajos Fülöp Dóka Ph.D.
	Ms. Erika Kutasy Ph.D.
	András Szabó Ph.D.
Secretary	Ms. Gyöngyi Kovács
	Ms. Endréné Szendrei

### **Department of Plant Biotechnology** Böszörményi út 138., Debrecen, 4032

Professor	Miklós Gábor Fári D.Sc.
Associate Professor	Ms. Szilvia Veres Ph.D.
Assistant Lecturer	Ms. Szilvia Kovács
	Ms. Brigitta Tóth Ph.D.
Assistant Professor	Ms. Éva Domokosné Szabolcsy Ph.D.
	Ms. Zsuzsanna Lisztes-Szabó Ph.D.
	Péter Makleit Ph.D.

**Genetics Group**

Böszörményi út 138., Debrecen, 4032

Head Pál Pepó C.Sc.

**INSTITUTE OF PLANT PROTECTION**

Böszörményi út 138., Debrecen, 4032

Head of Institute György János Kövics C.Sc.

Associate Professor András Bozsik C.Sc.

László Radócz C.Sc.

Assistant Professor Antal Nagy Ph.D.

Senior Research Fellow Gábor Tarcali Ph.D.

Secretary Ms. Tünde Szabóné Asbolt

**AGRICULTURAL LABORATORY CENTRE**

Böszörményi út 138., Debrecen, 4032

Assistant Research Fellow Ms. Nóra Óri

Technical Assistant Ms. Nóra Bessenyei Tarpay  
Csaba Kiss

Ms. Hajnalka Pákozdy

Ms. Istvánné Sörös

Gábor Tóth M.D.

Associate Professor Ms. Tünde Pusztahelyi Ph.D.

**INSTITUTE OF WATER AND ENVIRONMENTAL MANAGEMENT**

Böszörményi út 138., Debrecen, 4032

Deputy Head Csaba Juhász Ph.D.

Head of Institute János Tamás D.Sc.

Assistant Research Fellow Péter Riczu

Ms. Nikolett Szöllösi

Professor Lajos Blaskó D.Sc.

Technical Assistant Ms. Kamilla Berényi-Katona

Ms. Katalin Bökfí

Associate Professor Ms. Elza Kovács Ph.D.

Assistant Lecturer Ms. Tünde Fórián Ph.D.

	Ms. Ildikó Gombosné Nagy Ph.D.
	Ms. Lili Mézes Ph.D.
Assistant Professor	Attila Nagy Ph.D.
	Csaba Pregun Ph.D.
Secretary	Ms. Imre Lászlóné Huszka
	Ms. Zsuzsanna Szathmáriné Pongor

**FACULTY OF ECONOMICS AND BUSINESS**

Böszörményi út 138., Debrecen, 4032

Assistant Research Fellow	Zoltán Győri Ph.D.
Professor	Csaba Berde C.Sc.
	Miklós Herdon Ph.D.
	András Nábrádi MBA, C.Sc.
	Géza Nagy C.Sc.
	József Popp D.Sc.
	Zoltán Szakály C.Sc.
College Professor	Ferenc Kalmár Ph.D.
	Ms. Edit Gizella Szűcs Ph.D.
Associate Professor	Péter Balogh Ph.D.
	Zsolt Csapó Ph.D.
	Wiwczaroski Dr. Troy B. Ph.D.
	János Felföldi Ph.D.
	István Grigorszky Ph.D.
	Ms. Csilla Juhász Ph.D.
	Levente Karaffa Ph.D.
	István Kuti C.Sc.
	László Lakatos Ph.D.
	Ms. Ilona Nagyné Polyák Ph.D.
	Miklós Pakurár Ph.D.
	Károly Pető C.Sc.
	László Posta C.Sc.
	Sándor Szűcs C.Sc.
	István Szűcs Ph.D.
Assistant Lecturer	Ms. Mónika Harangi-Rákos
Assistant Professor	Ms. Andrea Bauerné Gáthy Ph.D.

THE DEPARTMENTS OF THE FACULTY

Zoltán Csiki M.D., Ph.D.

Ms. Zita Hajdu Ph.D.

Ms. Judit Katonáné Kovács Ph.D.

Sándor Kovács Ph.D.

Ms. Ildikó Tar Ph.D.

Ferenc Buzás Ph.D.

Research Fellow

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## CHAPTER 7

### UNIVERSITY CALENDAR

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Academic calendar

2015/2016

Events	Dates
Opening Ceremony	September 6 (Sunday)
Enrolment week	September 7 - 11
Study period for not final year students	September 14 - December 18 (14 weeks)
Study period for final year students	September 14 - November 13 (9 weeks)
Deadline for thesis submission	October 30
Examination period for final year students	November 16 - December 4 (3 weeks)
Examination period for not final year students	December 21 – February 5 (7 weeks)
Defending of the thesis	November 30 – December 1
Final exam	December 10 - 11
Graduation ceremony	December 19
Enrolment week	February 8 - 12
Study period for not final year students	February 15 – May 20 (14 weeks)
Study period for final year students	February 15 - April 22 (10 weeks)
Deadline of the thesis	April 22
Examination period for final year students	April 25 – May 20 (4 weeks)
Examination period for not final year students	May 23 - July 8 (7 weeks)
Defending of the thesis	May 26 - 27
Final exam	June 6 - 7
Graduation ceremony	June 18



**CHAPTER 8**

**AGRICULTURAL ENGINEERING MSC PROGRAMME**

AGRICULTURE ENGINEERING MSc PROGRAMME

About the course:

The MSc in Agricultural Engineering is designed to develop your undergraduate knowledge and improve it through application and research. The field of Agricultural Engineering is broad and the programme reflects this diversity, with emphasis on Applied Biochemistry, Applied Plant Physiology, Applied Genetics and Biotechnology, Applied Soil Science, Production Physiology, Nutrient Management are the key research areas of the Faculty. Throughout your stay at Debrecen University, which is the second largest university in Hungary, with 30000 students, as a postgraduate student of Agricultural Engineering, you will have a personal academic tutor to guide you through your studies and to meet your individual goals and interests. We offer you a 4 week field practice in summer.

Requirements:

Application requirements: BSc degree or higher in Agricultural Science. BSc degree or higher in a biologically-related degree. Other approved accreditation or professional qualification. Upper-intermediate English language certificate.

Length of the Study programme: Two year full-time taught programme plus dissertation. presently no part-time options are available.

Number of ECTS credits: 120

The course consists of lectures and seminars. Attendance at lectures is recommended, but not compulsory. Participation at practice classes is compulsory. A student must attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. A student can't make up a practice class with another group. The attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certificate needs to be presented. Missed practices should be made up for at a later date, being discussed with the tutor. Active participation is evaluated by the teacher in every class. If a student's behavior or conduct doesn't meet the requirements of active participation, the teacher may evaluate his/her participation as an absence because of the lack of active participation in class.

The knowledge of the students will be tested several times depending on the class types during the entire course. The training ends in a Final Exam (FE) of the whole semester material and a minimum of four FE dates will be set during the examination period. Unsuccessful students may repeat

During the semester there are two tests: the mid-term test in the 8th week and the end-term test in the 15th week. Students have to sit for the tests.

Tests are evaluated according to the followings:

Score Grade

0-59 fail (1)

60-69 pass (2)

70-79 satisfactory (3)

80-89 good (4)

90-100 excellent (5)

absence for any reason counts as 0%.

If the score of any test is below 60, the student can take a retake test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.

An offered grade: It may be offered for the students if the average of the mid-term and end-term tests is at least good (4). The offered grade is the average of them.

Careers:

## CHAPTER 8

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Postgraduates may progress to a PhD or find employment in agricultural science research, crop science research, lecturing, consultancy or other science based sectors of crop production, animal husbandry, and agriculture or food industry. Our faculty has a good relationship with agricultural enterprises of the region.

## CHAPTER 9

## CURRICULUM OF THE FULL TIME PROGRAMME

Compulsory courses														Prerequisites of taking the subject	
1. year															
Subjects	Neptun code	1 <sup>st</sup> semester						2 <sup>nd</sup> semester							
		L	S	P	Exam	Crd.	L	S	P	Exam	Crd.				
Academic language skill I.	MTMAME047						2						ESE	2	None
Alternative land use	MTMAME029						1			1			ESE	3	Applied soil science, Plant nutrition management
Animal husbandry I.	MTMAME010						2			1			ESE	3	None
Animal nutrition	MTMAME008	1		1	ESE	3									None
Applied biochemistry	MTMAME001	1		1	ESE	3									None
Applied plant genetics and biotechnology	MTMAME003	2		1	ESE	3									None
Applied plant physiology	MTMAME002	1		1	ESE	3									None
Applied soil sciences	MTMAME004	2		1	ESE	3									None
Feedstuffs and feed processing	MTMAME028						1			1			ESE	3	None
Horticulture	MTMAME012						1			2			ESE	2	None
Integrated crop production I.	MTMAME009						2			1			ESE	3	None

Compulsory courses														Prerequisites of taking the subject
1. year (continued)														
Subjects	Nepton code	1 <sup>st</sup> semester					2 <sup>nd</sup> semester							
		L	S	P	Exam	Crd.	L	S	P	Exam	Crd.			
Intercultural communication	MTMAME046	2			ESE	2								None
Intercultural communication (lecture)	MTMAME045	2			ESE	2								None
Irrigated farming	MTMAME007						1			1		ESE	2	None
Plant nutrition management	MTMAME006	1		1	ESE	2								None
Population genetics	MTMAME026	1		1	ESE	3								None
Production physiology	MTMAME005	1			ESE	2								None
Professional language skill I.	MTMAME048	2			ESE	2								None
Soil cultivation and land development	MTMAME011						1					ESE	2	Applied soil science, Plant nutrition management
Soil ecology	MTMAME027	1		1	ESE	3								None
Thesis project work I.	MTMAME051											ESE	10	None

Compulsory courses														Prerequisites of taking the subject	
2. year															
Subjects	Neptun code	1 <sup>st</sup> semester						2 <sup>nd</sup> semester							
		L	S	P	Exam	Crd.	L	S	P	Exam	Crd.				
Academic language skill II.	MTMAME049	2			ESE	2									None
Alternative crop production strategies	MTMAME030	1		1	ESE	3									None
Animal husbandry II.	MTMAME014	2		1	ESE	3									None
Animal husbandry III.	MTMAME022						2			1	ESE	3			None
Animal husbandry politics	MTMAME033						1			1	ESE	3			None
Animal keeping technologies	MTMAME031	1		1	ESE	3									None
Communication	MTMAME020	1		1	ESE	2									None
Environmental and landscape management	MTMAME015	1		1	ESE	2									None
Integrated crop production II.	MTMAME013	2		1	ESE	3									None
Integrated crop production III.	MTMAME021						2			1	ESE	3			None
Management	MTMAME025						2			1	ESE	3			None

Compulsory courses														Prerequisites of taking the subject
2. year (continued)														
Subjects	Neptun code	1 <sup>st</sup> semester					2 <sup>nd</sup> semester							
		L	S	P	Exam	Crd.	L	S	P	Exam	Crd.			
Marketing	MTMAME016	1			ESE	2								None
Product quality, crop processing	MTMAME017	1		1	ESE	2								None
Professional language skills II.	MTMAME050	2			ESE	2								None
Quality assurance	MTMAME024						2		1	ESE	3			None
Regional farming	MTMAME032						1		1	ESE	3			None
Research methodology	MTMAME019	2		1	ESE	2								None
Sectoral economy I.	MTMAME018	2		1	ESE	3								None
Sectoral economy II.	MTMAME023						2		1	ESE	3			None
Thesis project work II.	MTMAME052			15	ESE	8								None
Thesis project work III.	MTMAME053								15	ESE	12			None

Required elective courses													Prerequisites of taking the subject		
1. year															
Subjects	Neptun code	1 <sup>st</sup> semester				2 <sup>nd</sup> semester				L	S	P		Exam	Crd.
		L	S	P	Exam	Crd.	L	S	P				Exam		
Goat breeding	MTMAME034									1			ESE	2	None
Medical and spice crops production	MTMAME035									1			ESE	2	None

Required elective courses														Prerequisites of taking the subject
2. year														
Subjects	Neptun code	1 <sup>st</sup> semester						2 <sup>nd</sup> semester						
		L	S	P	Exam	Crd.	L	S	P	Exam	Crd.			
Animal breeding	MTMAME042						1		1	ESE	2			None
Biometrics	MTMAME036	1		1	ESE	3								None
Etology	MTMAME039	1			ESE	2								None
EU knowledge	MTMAME041	1		1	ESE	3								None
Extension in crop production	MTMAME044						1		1	ESE	2			None
Integrated plant protection	MTMAME037	1		1	ESE	3								None
Milk and meat processing	MTMAME043						1		1	ESE	2			None
Organic farming	MTMAME038	1		1	ESE	3								None
Project management	MTMAME040	1		1	ESE	3								None



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## CHAPTER 10

### COURSE DESCRIPTIONS

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## Agricultural Laboratory Centre

Subject: **INTERCULTURAL COMMUNICATION**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **2**

### Requirements

Short course description:

This course introduces students to the problems of culture and interculturality, as well as cultural and ethnic conflict areas and stereotypes to be avoided, when conducting professional business activities. Additionally, there is the question of identity and the problem of national identity vs. otherness. Other areas of study include globalization, non-verbal communication and business etiquette.

### Required reading materials

*James Neuliep: Intercultural Communication: A Contextual Approach*  
Sage Publications Inc., 2007.

*Milton J. Bennett: Basic Concepts of Intercultural Communication: Selected Readings*  
Intercultural Press, 1998.

*Bridging the Cultural Gap: A Practical Guide to International Business Communication*  
Penny Carté and Chris J. Fox, Kogan Page, 2004.

*William B. Gudykunst and Young Yun Kim: Communicating with Strangers: Approach to Intercultural Business Communication*  
2nd. McGraw Hill, 1992.

*Lillian H. Chaney and Jeanette S. Martin: Intercultural Communication: A Reader*  
9th. Prentice Hall, 2000.

*Linda Beamer and Iris Varner: Intercultural Communication in the Global Workplace*  
McGraw Hill Irwin, 2000.

Subject: **INTERCULTURAL COMMUNICATION (LECTURE)**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **2**

### Requirements

Short course description:

To help them to be aware of the national and international cultures and values around, the students learn about cultural stereotypes and realities, national reputations in business and otherwise, as well as cultural values and the respect for them.

The effects of globalization and localization, and the conflicts arising thereof are also taken into consideration. Multiculturalism, its successes and failures. Cultural identity and global conflicts, ethics and related conflicts are also discussed.

### Required reading materials

*James Neuliep: Intercultural Communication: A Contextual Approach*

Sage Publications Inc., 2007.

*Milton J. Bennett: Basic Concepts of Intercultural Communication: Selected Readings*

Intercultural Press, 1998.

*Bridging the Cultural Gap: A Practical Guide to International Business Communication*

Penny Carté and Chris J. Fox, Kogan Page, 2004.

*William B. Gudykunst and Young Yun Kim: Communicating with Strangers: Approach to Intercultural Business Communication*

2nd. McGraw Hill, 1992.

*Lillian H. Chaney and Jeanette S. Martin: Intercultural Communication: A Reader*

9th. Prentice Hall, 2000.

*Linda Beamer and Iris Varner: Intercultural Communication in the Global Workplace*

McGraw Hill Irwin, 2000.

## Department of Animal Husbandry

Subject: **ANIMAL NUTRITION**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

### Requirements

Short description course:

Feedings possibilities to modify of composition, quality and safety of meat of several animal species as animal origin foods

Feedings possibilities to modify of composition, quality and safety of eggs of several poultry species as animal origin foods

Feedings possibilities to modify of composition, quality and safety of milk of several animal species as animal origin foods

Processing of feeds in the interest to increasing efficiency of nutrient transformation

Nutrigenomics as a new method in the nutrition

### Required reading materials

*Fekete, S. Gy. (Ed.): Veterinary Nutrition and Dietetics. Foundation for the Hungarian Veterinary science*

Budapest, Hungary, 2008.

*W. G. Pond: Basic Animal Nutrition and Feeding*

5th. John Wiley&Sons, ISBN: 0-471-30864-1

Subject: **PRODUCTION PHYSIOLOGY**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **1**

## Requirements

Short course description:

Interaction of the farm animal and the environment of production. Function of the digestive system; process of feed-digestion; the intermediary metabolism; characteristic of ruminant digestion. Physiology of muscle system. Biology of the meat production. The endocrine system. Physiology of reproduction. Biotechnological methods in animal breeding. Physiology of milk production. The reproduction physiology of the hen.

### Required reading materials

*Biotechnology in Animal Husbandry (I. kötet)*

Belgrád: Institute for Animal Husbandry, 2007.

*Biotechnology in Animal Husbandry (II. kötet)*

Belgrád: Institute for Animal Husbandry, 2007.

*Willaim O Reece: Physiology of Domestic Animals.*

Lippincott Williams and Wilkins, ISBN: 0683072404

*P. L. Senger: Pathways to Pregnancy and parturition*

Current Conceptions, Inc., 2003.

*Cronjé, P. B.: Ruminant Physiology*

Wallingford: CABI Publishing, 2004.

## Department of Landscape Ecology

Subject: **APPLIED BIOCHEMISTRY**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

## Requirements

Short course description:

Classification of biomolecules. Differences between biomolecules and inorganic compounds. Carboxylic acids, carbohydrates, proteins, lipids, nucleic acids. Enzymes, vitamins, hormones. Photosynthesis. Biosynthesis and decomposition of polysaccharides, lipids and proteins. Szentgyörgyi-Krebs cycle. Urea cycle. Glyoxylic acid cycle. Focusing on carbohydrate metabolism, proteins, fatty acids, and signal- and regulation mechanisms at an advanced level.

### Required reading materials

*Marschner, H.: Mineral nutrition of Higher Plants*

Academic Press USA, 1986.

*Squires, E. J.: Applied Animal Endocrinology*

CABI Publishing, 2003.

*Christopher K. Mathews, K.E. van Holde: Biochemistry*

The Benjamin/Cummings Publishing Company, 1990. ISBN: 0805350152

*Baldi, P.: DNA Microarrays and gene expression*

Cambridge University Press, 2002.

*K. Mengel and E. A. Kirkby: Principles of plant nutrition*

International Potash Institute, Bern, Switzerland, 1987. ISBN: 3906535037

Subject: **APPLIED PLANT PHYSIOLOGY**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

### Requirements

Short course description:

During the time of course students receive scientific information about the topic of plant physiology: photosynthesis, respiration, water management, minerals assimilation, nitrogen metabolism, bioregulators, seed germination, plant development, flowering, fruit formation and ageing. Both of basic knowledge and practical application will be received by the instructor during the course. Moreover students learn about the influence of environmental factors to the vital processes and stress physiology also.

### Required reading materials

*Lincoln Taiz and Eduardo Zeiger: Plant Physiology fourth edition ONLINE*

*H. Lambers, F.S., Chapin III., T. L., Pons: Plant Physiological Ecology*  
Springer, 2000.

*M. Pessarakli: Handbook of Plant and Crop Stress*  
Marcel Dekker, 1999.

*Marschner, H.: Mineral nutrition of Higher Plants*  
Academic Press USA, 1986.

Subject: **PLANT NUTRITION MANAGEMENT**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

### Requirements

Short course description:

Macro, mezo and micro elements fertilization. Correlation between crop productivity and the level of supply.

Effect of ecological and field conditions on efficiency of nutrition. Ecological elements influence the nutrient supply of crops. Organic matter management. Fertilization of main crops.

Role of different tillage systems in nutrition management. Protecting of soil fertility in conventional systems. Principles and methods of nutrient balance. Principles and methods of field experiments

### Required reading materials

*J. Antal: Crop production I-II.*

Mezőgazda Kiadó, Bp., 2005.

*Crop production booklets I-VIII. (university books)*

*P. Pepó-M. Sárvári: Basic knowledge of crop production (university book)*  
1999.

*Caroly Fry: The impact of climate change: The world's greatest challenge in the twenty-first century*

## Faculty of Economics and Business

Subject: **PROFESSIONAL LANGUAGE SKILL I.**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **2**

### Requirements

Short course description:

This course introduces students to the norms and expectations of professional presentation styles in the following areas: company introduction, product description and sales, convincing an audience to accept change and how to give a presentation in a team. Rhetorical methods, use of technologies and argumentation systems, as well as logic, are incorporated into the course.

### Required reading materials

*Rodgers, Drew: English for International Negotiations*

St. Martins, 1997.

*Wiwczarowski, Troy B.: Writing and Professional Communication*

Debrecen, 2007.

## Genetics Group

Subject: **APPLIED PLANT GENETICS AND BIOTECHNOLOGY**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **2**

Practical: **1**

### Requirements

Short course description:

The main objective of the course is to provide a theoretical and practical introduction to the scientific principles of plant genetics, biotechnology. Applied plant molecular genetics and biotechnology including the hormonal and developmental regulation of gene expression, in vitro and tissue culture techniques, and transformation strategies. Marker-assisted breeding, risk assessment for Genetically Modified Organisms, Genetically Modified Organism certification protocols and Arabidopsis genetics. Genetic transformation in crop, Genetic transformation by particle bombardment In vitro regeneration and genetic transformation Microprojectile-mediated Agrobacterium-mediated transformation. Regeneration and genetic transformation. In vitro and recombinant DNA technologies for the improvement of grain, in vitro morphogenesis, biotic and abiotic stress tolerance, genomics, nitrogen fixation and utilization, nutritional improvement, and biodiversity in vitro regeneration and genetic transformation expression and stability of transgenes modification of traits in almost all the important crops area. Molecular players in nitrogen use efficiency, DNA markers and molecular plant breeding, genetics of plant defense signaling and genetic engineering of crop plant. Describe important techniques in molecular breeding. Genetics of molecular markers in plants. Molecular breeding for drought tolerance. Plant diseases and

resistance. Tolerance to abiotic stresses. Tissue culture and other in vitro techniques.

### **Required reading materials**

*Bernard R. Glick and Jack J. Pasternak: Molecular biotechnology: principles and applications of recombinant DNA*

2nd. Washington, D.C., 1998.

*Bruce Alberts et al: Molecular biology of the cell*

4th. New York: Garland Science, 2002.

*S. H. Mantell et al: Principles of plant biotechnology: an introduction to genetic engineering in plants.*

Oxford, Boston: Blackwell Scientific Publications, 1985.

*Frederick M. Ausubel et al: Current protocols in molecular biology*

New York: John Wiley & Sons, 1994.

Subject: **POPULATION GENETICS**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

### **Requirements**

Short course description:

This course will serve as an introduction into the field of population genetics. Of primary importance is an understanding Mendel's laws and other genetic principals as they affect entire populations of organisms. Moreover, this class will focus on how to estimate population parameters that are important descriptors of genetic variation. These concepts will necessarily be based on genetic models and require a quantitative approach to genetics. Overall, the aim of this class is to enable you to apply insights gained from classic and modern genetic techniques to understand how genetic variation is produced, maintained, and distributed within and among populations.

### **Required reading materials**

*John H. Gillespie: Population genetics*

2. ISBN: 0-8018-8009-2

*Philip W. Hendrick: Genetic of population*

2005. ISBN: 0-7637-4772-6

*Daniel L. Hartl: A Primer of Population Genetics*

3. Harvard University, 2000.

*Falconer, F. S. and MacKay, T. F. C.: Introduction to Quantitative Genetics*

4th. Longman Group, 1996.

## Institute of Agricultural Chemistry and Soil Science

Subject: **APPLIED SOIL SCIENCES**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **2**

Practical: **1**

### Requirements

Short course description:

First of all varied functions of soil have been introduced. Physical and chemical features of soil and correlations among them have been summarized. Biological processes in soil have been presented. Other important points of the course are soil biodiversity, effects of ecological parameters and soil features on soil fertility. Favourable and unfavourable influences of applied technological methods from the point of environmental protection have been emphasized. Nutrient management in the precision agriculture, soil degradation processes and possibilities of their improving, soil information system, principles of soil protection strategy in EU are important topics of the course.

### Required reading materials

*Blum, W. E. H.-Santelises, A. A.: A concept of sustainability and resilience based on soil functions: the role of ISSS in promoting sustainable land use*

CABI Publishing, 1994.

*Brady, N.-Weil, R.: The Nature and properties of Soils.*

Prentice-Hall, 1996.

*Paul, A. D.: Soil microbiology, Ecology and Biochemistry*

Acad. Press Elsevier, 2007.

*Wood, M. : Environmental soil Biology.*

Blackie Academic-Professional, 1995.

*Stolp, H.: Microbial ecology: organisms, habitats, activities, Cambridge studies in ecology*  
1988.

*Cunningham, W. P.: Environmental Science. A Global Concern.*

1997.

Subject: **SOIL ECOLOGY**

Year, Semester: 1<sup>st</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

### Requirements

Short course description:

Important points of the course: Biosphere, bioms, ecosystems. Soil environment and environmental effects. Functions of agro-ecosystems. Structure of different ecosystems. Soil as the habitat of terrestrial biocoenoses. Living organisms of soil. The role of living being in processes in soil. The effect of living organisms on the soil formation. The role of living organisms in the material cycles and energy flow. Humification. Mineralization. The cycles of C, N, S, P. Ecological correlations among living organisms in soil. Nutrient netting in soil. Ecology of extreme, polluted soil. Soil ecological manipulations – soil biotechnology.

### Required reading materials

- Brady, N.-Weil, R.: The Nature and properties of Soils.*  
Prentice-Hall, 1996.
- Coleman, D-Crossley, D. A.: Fundamentals of Soil Ecology.*  
Academic Press USA, 1996.
- Killham, K.: Soil Ecology*  
1994.
- Lavelle P.-Spain, V.A.: Soil Ecology*
- Paul, A. D.: Soil microbiology, Ecology and Biochemistry*  
Acad. Press Elsevier, 2007.
- Wood, M. : Environmental soil Biology.*  
Blackie Academic-Professional, 1995.
- Filep Gy.: Soil Chemistry, processes and constituents.*  
Akadémiai Kiadó, Bp., 1995.

## Agricultural Laboratory Centre

Subject: **ACADEMIC LANGUAGE SKILL I.**

Year, Semester: 1<sup>st</sup> year/2<sup>nd</sup> semester

Lecture: **2**

### Requirements

Short course description:

The pedagogical goals of the subject are to equip students with the essential receptive skills of reading and understanding high standard technical texts and to prepare them to be able to acquire subject knowledge and read scientific literature in English.

### Required reading materials

- Wallace, M.: Study skills in English*  
Cambridge University Press, 2006.
- Glendening, E.: Study Reading. A course in reading skills for academic purposes.*  
Cambridge University Press, 2006.

## Department of Animal Husbandry

Subject: **ANIMAL HUSBANDRY I.**

Year, Semester: 1<sup>st</sup> year/2<sup>nd</sup> semester

Lecture: **2**

Practical: **1**

### Requirements

Short course description:

Determination of breeding aims. Animal performance measurements. Estimation of genetic



parameters. Estimation of breeding value. Selection. Qualitative features/parameters of poultry, heritability of these parameters. Quantitative features/parameters of poultry, heritability of these parameters. Theory and practice of hybridization at different poultry species. Selection techniques at poultry hybridization. Possibilities of utilization of rare genotypes in breeding programmes and production. Genotype x environment interaction in poultry nutrition at different types of production. Evaluation of nutrient value of feed of different origin. Animal keeping technologies depending on genotype, nutrition, production with consideration into the changing market demand. Processing technologies to improve the efficiency the poultry production.

### **Required reading materials**

*W. M. Muir, S. E. Aggrey: Poultry Genetics, Breeding and Biotechnology.*  
CABI Publishing, 2003.

Subject: **FEEDSTUFFS AND FEED PROCESSING**

Year, Semester: 1<sup>st</sup> year/2<sup>nd</sup> semester

Lecture: **1**

Practical: **1**

### **Requirements**

Short course description:

Knowledge of methods to improvement of feedstuffs by feed processing in connection with the practical animal feeding. To solve problems based on former acquired knowledge in the field of animal nutrition and feeding, and on the different basic sciences. Food safety risks of feeds and feeding. Feeds and feeding on the production of functional foods.

### **Required reading materials**

*Fekete, S. Gy. (Ed.): Veterinary Nutrition and Dietetics. Foundation for the Hungarian Veterinary science*

Budapest, Hungary, 2008.

*W. G. Pond: Basic Animal Nutrition and Feeding*

5th. John Wiley&Sons, ISBN: 0-471-30864-1

## **Department of Landscape Ecology**

Subject: **INTEGRATED CROP PRODUCTION I.**

Year, Semester: 1<sup>st</sup> year/2<sup>nd</sup> semester

Lecture: **2**

Practical: **1**

### **Requirements**

Short course description:

The roles, targets and issues of crop production in domestic economics. The positions of crop production in the world, in EU and in Hungary. Targets, issues, developing trends. Multifunctional crop production. Sustainable crop production. Alternative crop models. The agroecological,

## CHAPTER 10

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biological-genetic and agrotechnical factors of crop production. Material and energy process in crop production. „Green” energetical industry, bioenergy in crop production. Quality dimensions in crop production. Production of foods, feedstocks and industrial raw materials in crop production. Organic farming. Elements and models of integrated crop production. Crop production and environmental protection.

### **Required reading materials**

*Jr., J. Benton Jones: Agronomic Handbook: Management of Crops, Soils and Their Fertility*  
CRC Press., 2002.

*Allen V. Barker, David J. Pilbeam: Handbook of Plant Nutrition*  
CRC Press., 2006.

*Milkha Aulakh., Cyntia A. Grant: Integrated Nutrient Management for Sustainable Crop Production*  
CRC Press., 2008.

Subject: **IRRIGATED FARMING**

Year, Semester: 1<sup>st</sup> year/2<sup>nd</sup> semester

Lecture: **1**

Practical: **1**

### **Requirements**

Short course description:

Interaction between water management and crop production in agriculture. Water balance of plants, water requirement of plants. Bases of water regulation in crop production. Learning of significance of environment friendly and economic irrigation. Effect of irrigation on soil and plant. Production requirements of irrigation. Aims of irrigated crop production. Necessary of irrigation, efficiency of water. Principles of fertilization in irrigated fields. Evaluation of irrigation patterns. Main functions of irrigation and crop production. Correlations between irrigation and yield stability. Irrigation regime of main crops.

### **Required reading materials**

*Burton, M.: Irrigation Management: Principles and Practice*  
CAB Publishing, 2010. ISBN: 9781845935160

*Brebbia, C.A, Marinova, M, Bjornlund, H: Sustainable Irrigation Management, Technologies and Policies III.*

Wit Pr/Computational Mechanics, Billerica, USA, 2010.

Subject: **THESIS PROJECT WORK I.**

Year, Semester: 1<sup>st</sup> year/2<sup>nd</sup> semester

# Institute for Land Utilisation, Technology and Regional Development

Subject: **ALTERNATIVE LAND USE**

Year, Semester: 1<sup>st</sup> year/2<sup>nd</sup> semester

Lecture: **1**

Practical: **1**

## Requirements

Short course description:

Providing land use knowledge supplementing the body of basic natural science, forming the approach of students. They have to be able to effectively utilise natural, artificial and social resources provided for crop production and to protect the balance of the natural environment by planning land use methods.

## Required reading materials

*Birkás, M. (ed.): Soil Management and Land Use*

Agricultural University, Gödöllő, 1996.

*Filep, Gy. (ed.): Land Use and Soil Management*

Agricultural University, Gödöllő, 1997.

*Nagy, J., Rajkai K. (eds.): Environmental problems and results in under transition agriculture*

Debrecen Agricultural University, Debrecen, 2001.

*Nagy, J. (ed.): Maize production*

Akadémia Kiadó, Budapest, 2008.

*Nagy, J. Fieldsend, A.: Strategies for the future based on land use evaluations( In: Simon, L (ed.)*

*Innovation and utility in the Visegrad Fours)*

International Visegrad Fund, Nyíregyháza,

Subject: **SOIL CULTIVATION AND LAND DEVELOPMENT**

Year, Semester: 1<sup>st</sup> year/2<sup>nd</sup> semester

Lecture: **1**

Practical: **1**

## Requirements

Short course description:

Students acquire the knowledge needed for the maintenance and improvement of soil fertility and the rational utilisation of energy that can be connected into land use by means of the soil. They also have to be able to practically apply the processes and methods that improve soil fertility.

## Required reading materials

*Birkás, M.: Environmentally-Sound Adaptable Tillage.*

Akadémiai Kiadó, Bp., 2008. ISBN: 9789630586313

*Birkás, M., Szalai, T., Gyuricza, Cs., Jolánkai, M., Gecse, M: Subsoil compaction problems in Hungary.*

Catena Verlag, Reiskirchen, 2000.

*Farkas, Cs., Gyuricza, Cs., László, P., Birkás, M.: Study of the influence of soil tillage on soil watre*

## CHAPTER 10

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*regime*

Catena Verlag, Reiskirchen, 2000.

*Morgan, R.P.C.: Soil Erosion and Conservation*

Longman Kiadó, London, 1995.

*Schwab, G.O., Fangmeier, D.D., Elliot, W.J., Frevert, K.R.: Soil and Water Conservation Engineering*

John Wiley&Sons, 1993.

## Institute of Horticulture

Subject: **HORTICULTURE**

Year, Semester: 1<sup>st</sup> year/2<sup>nd</sup> semester

Lecture: **1**

Practical: **2**

### Requirements

Short course description:

Definition and importance of horticulture. Production are and economic situation of horticulture in Hungary and all over the world. Braches of horticulture: including the disciplines of fruit and grape production, vegetable growing, ornamental production. Fundamentals of fruit production technology, Introduction to grape and wine production and basics of production technological elements, Basics of vegetable growing, Clastering ornamental plants, basic ornamental production technology.

### Required reading materials

*U. Banerjee, M. Deep: A Handbook of Practical Horticulture*  
2002.

*N. Rai and D. S. Yadav: Advances in Vegetable Production*  
2005.

*K. V. Peter: Basics of Horticulture*  
2009.

## Agricultural Laboratory Centre

Subject: **ACADEMIC LANGUAGE SKILL II.**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **2**

### Requirements

Short course description:

This course introduces students to the mechanics of more formal academic writing. Organization, tone, stylistics, thesis statements, proper methods of citation and documentation are included for such types of writing as: abstracts, paraphrasing, summarizing, lab report writing and basic grant writing skills.

### Required reading materials

*Reid, Joy M. : The Process of Composition*

3rd. Longman: White Plains, NY., 2000. ISBN: 0-13-021317-9

*Wiwczarowski, Troy B.: Writing and Professional Communication*  
Debrecen, 2007.

Subject: **COMMUNICATION**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

### Requirements

Short course description:

Importance of communication and rhetoric. Verbal and nonverbal communication. Problems of communication and rhetoric. Communication and culture. Mass media, communication in marketing and business. Communication for managers, and organizational communication. Rhetoric for managers.

### Required reading materials

*John Fiske: Introduction to communication studies*

New York: Routledge, 1991.

*John M. Penrose-Robert W. rasberry-Robert J. Myers: Business Communicaton for managers: An Advanced Approach South*

Western College, 2005.

*Philip G. Clampitt: Communicating for managerial Effectiveness*

SAGE Publications, 2004.

Subject: **MARKETING**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **1**

### Requirements

Short course description:

The main aim the course is to make students capable to understand the basics of marketing, marketing concepts and practical implementation of the theoretical knowledge. Main topics of the course are as follows: basics of marketing, market segmentation, positioning, consumer behaviour, product policy, pricing policy, channel policy and promotion.

### Required reading materials

*Philip Kotler-Gary Armstrong: Principles of Marketing*

Pearson Prantice Hall, 2006.

*Stanley-William-E. Jerome: Basic Marketing*

McGraw Hill, 1999.

## CHAPTER 10

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Subject: **PROFESSIONAL LANGUAGE SKILLS II.**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **2**

### **Requirements**

Short course description:

Written correspondence, report writing, case study preparation for use in a business setting, as well as an introduction to the problems of business negotiation are all the foci of this course.

### **Required reading materials**

*Rodgers, Drew: English for International Negotiations*

St. Martins, 1997.

*Wiwczaroski, Troy B.: Writing and Professional Communication*

Debrecen, 2007.

Subject: **SECTORAL ECONOMY I.**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **2**

Practical: **1**

### **Requirements**

Short course description:

Economic and managerial questions of the crop production, international outline, european review, macroeconomic approach in Hungary. Fixed assets, current assets, human workload. Cost-benefit analysis, income, natural and economic efficiency in the sector. Regulations, subsidy in agriculture. Elaboration of the technological and business plan in a certain crop sector.

### **Required reading materials**

*T. K. Wolfe: Production of field Crops; A Textbook of agronomy*

International Book Distrubing Co., Pub., 2004. ISBN: 8187421355

*Kent D. Olson: Farm management, Principles and Strategies*

Iowa State University Press, 2003. ISBN: 9780813804187

*Nábrádi A.-Takácsné Gy. K.-Pupos T.: Üzemtan I, Üzemtan II.*

Debreceni Egyetem Agrártudományi centrum, 2007. ISBN: 987-963-9732-70-4

## Animal Genetics Laboratory

Subject: **ANIMAL HUSBANDRY II.**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **2**

Practical: **1**

### Requirements

Short course description: Economic impact of the livestock industry in different regions. Sustainable animal husbandry (safe, humane and sustainable ways). Species discussed: rabbit, sheep, cattle, llama, goat, pig, poultries, horse, buffalo, fish, camel, alpaca, mollusks, crustaceans. Breeding organisations. Systems of production. Management, housing and equipments. Main diseases. Maintenance of health. Main products and product quality. Directions, tools, results of developing animal breeding. Definition and areas of animal breeding policy; relationship between agricultural policy and animal breeding policy. Ratio of species and its regulation in animal husbandry, determination of the production, profitability. Estate structure of animal husbandry, concentration of livestock. Animal husbandry activities of farmers, planning. Funding of animal husbandry. Enactment and setting up regulations in animal husbandry, laws and regulations in the operating animal husbandry. Safeguarding and harmonization of interests in animal husbandry. Profit harmonization between the participants of animal husbandry. Methods and tools of the qualitative development of animal husbandry. International co-operation. Special tasks of animal husbandry (nature conservation, environmental protection). Environmental impact of animal husbandry. Animal husbandry policy of farmers.

### Required reading materials

*WJA Payne and RT Wilson: Introduction to Animal Husbandry in the Tropics*  
Blackwell Publishing Ltd., 1999.

*Acker, Duane&Tour, Mickey La&Cunningham, Merl: Animal Science and Industry*  
7th. Pearson, London-New York, 2004.

*James Blakely, David H. Bade: Science of Animal Husbandry*  
6. Reston publishing Company, Inc, Reston Virginia, 1994.

## Department of Animal Husbandry

Subject: **ANIMAL KEEPING TECHNOLOGIES**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

### Requirements

Short course description:

Animal keeping technologies of poultry, sheep, horse, pig, cattle. Determination of special requirements about environmental conditions (area, comfort, temperature, humidity) of species and aim of production. Differences on animal requirements at different biological status and age of animal.

## CHAPTER 10

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Technologies at extensive and intensive animal productions. Technologies at different production levels. Technologies at a farm and a large industry-like system.

Evaluation of animal keeping technologies at the point of view of production level, profitability, adaptability of animal.

### Required reading materials

*C. M. Wathes D. R. Charles: Livestock Housing*  
CABI Publishing, 1994.

## Department of Landscape Ecology

Subject: **ALTERNATIVE CROP PRODUCTION STRATEGIES**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

### Requirements

Short course description:

Elements of crop production systems. Historical backgrounds of crop systems. Extensive, traditional, intensive and modern crop production systems. Role of multifunctional crop production in alternative crop strategies. Elements characters of industrial-like, integrated, sustainable and organic crop production systems and their applying possibilities. Role of biological-genetic basis in crop strategies. Characters of site-specific crop models. Variety-specific crop systems and their application.

### Required reading materials

*Jr., J. Benton Jones: Agronomic Handbook: Management of Crops, Soils and Their Fertility*  
CRC Press., 2002.

*Allen V. Barker, David J. Pilbeam: Handbook of Plant Nutrition*  
CRC Press., 2006.

*Milkha Aulakh., Cyntia A. Grant: Integrated Nutrient Management for Sustainable Crop Production*  
CRC Press., 2008.

Subject: **INTEGRATED CROP PRODUCTION II.**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **2**

Practical: **1**

### Requirements

Short course description:

Elements of integrated cereal crop models and their interactive effects. Sustainable crop technology of small grain cereals. Wheat production for quality. Site-and hybrid specific crop models in maize production. Environmental friendly technological systems in other small grain cereals. Role of



pulses in integrated crop management. Integrated crop technologies of some pulses. Quality of pulses. Complex, multidiscipline evaluation of crop models in cereals and pulses. Food safety demands in cereals and pulses crop production. Food security and logistics in cereals and pulses technologies.

### **Required reading materials**

*Jr., J. Benton Jones: Agronomic Handbook: Management of Crops, Soils and Their Fertility*  
CRC Press., 2002.

*Allen V. Barker, David J. Pilbeam: Handbook of Plant Nutrition*  
CRC Press., 2006.

*Milkha Aulakh., Cyntia A. Grant: Integrated Nutrient Management for Sustainable Crop Production*

CRC Press., 2008.

Subject: **PRODUCT QUALITY, CROP PROCESSING**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

### **Requirements**

Short course description:

Different requirements of quality determinations. Chemical and physical properties of plant origin materials. Principle of plant material qualification (physical, chemical, rheological, microbiological and radiochemical). Determination of cereal quality by different methods. Determination of oil crops quality. Main methods of tubel crops quality determination. Tobacco quality. Quality of fruits and vegetables.

### **Required reading materials**

*Kent N. L.: Technology of cereals*

BPCC Wheatons Etd., 1983.

*Pomerant Y.: Wheat chemsitry and technology*

AACC Inc., 1984.

*Olson, R.A.-Frey, K. J.: Nutritional quality of Cereal greins*

ASA, CSSA, 1990.

*D. K. Salunkhe: Storage, Processing and Nutritional Quality of Fruits and Vegetables*  
1976.

*Hoveland, C. S.: Crop quality, storage, and utilization.*

ASA Press Madison., 1980.

## CHAPTER 10

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Subject: **RESEARCH METHODOLOGY**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **2**

Practical: **1**

### **Requirements**

Short course description:

Basic definitions of experiments. In vitro, in vivo experiments, field experiments. Experimental methods, planning field experiments. The aims of the field experiments, factors, variables, plots, treatments, repetitions. The accuracy of the experiment data, the determinant factors, homogeneity. Estimating the experimental error, and the difference between the treatments. Real and hidden replications. Computing the required repetition number. Design variations of single and multi factor experiments, randomization.

Subject: **THESIS PROJECT WORK II.**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Practical: **15**

Subject: **THESIS PROJECT WORK III.**

Year, Semester: 2<sup>nd</sup> year/2<sup>nd</sup> semester

Practical: **15**

## Institute of Water and Environmental Management

Subject: **ENVIRONMENTAL AND LANDSCAPE MANAGEMENT**

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Lecture: **1**

Practical: **1**

### **Requirements**

Short course description:

The main aim of the course is to get the basic knowledge of environmental management and agri-environmental protection and beside this is to get the learning of theoretical and practical landscape management. Moreover, the goal is to use this knowledge readiness in the agricultural engineer practices. The development of the environment protection and environmental management. Natural resources and its types: the continual, the non renewable and the renewable resources. The concept and filch of the environment, the sources, reasons and forms of the environment pollution. The pollution of the air, and the protection against that pollution. The contamination and degradation of the soil: pollution and pollutants of the soil. Water quality, water quality defense. Water administration. Waste management: the concept, types, sources and effects of the waste. International and Hungarian practice of the agricultural environment management. The impacts of the agricultural production on the environment: effects of the crop production and animal breeding. Environmental Impact Assessment. The environmental state of Hungary: the state of the air, the water and the soil. State of the settlement environment. Basis of the landscape management. The

concept of landscape. Relations between men and landscape. Landscape protection and planning. Estate and magnitude of the natural environment. Landscape as a natural system. Conventional farming systems. Landscape management strategies. Role of the ecological farming systems in the sustainable landscape management. Crop production and landscape management. Methods of the ecological farming, typical perspectives. Animal breeding and landscape management.

### **Required reading materials**

*Miller, T. G.: Living in the environment*

Wadsworth. New York, 2000.

*Watts, s., Halliwell, D.: Essential Environmental science*

Publ. Routledge. London, 1996.

*Goodchild, M., Parks, B., Steyaert, L.: Environmental Modelling with GIS*

Oxford University Press, 1998.

## **Agricultural Laboratory Centre**

Subject: **MANAGEMENT**

Year, Semester: 2<sup>nd</sup> year/2<sup>nd</sup> semester

Lecture: **2**

Practical: **1**

### **Requirements**

Short course description:

Introduce MSc students to the history, development, most important schools, trends and theories of management science. Beside we aim to present most important relations, managerial methods and procedures. Main topics: development of management, managerial schools, trends, group management, organizational development, oragnizational culture, change management, motivation, conflict management, managerial method, managerial style, innovation management.

### **Required reading materials**

*Management Science Journal*

University of Pennsylvania, USA,

*Mintzberg, H.: Managing*

Prentice Hall, 2009. ISBN: 9780273709305

*Anderson, D. R., Sweeny, D. J., Williams, T. A.: An Introduction to Management Science:*

*Quantitative Approches to decision Making*

South-Western College Pub, USA, 2004.

Subject: **QUALITY ASSURANCE**

Year, Semester: 2<sup>nd</sup> year/2<sup>nd</sup> semester

Lecture: **2**

Practical: **1**

## Requirements

Short course description:

Principle and practice of general quality assurance. Safety and quality in the agrifood chain. Good agricultural practice, hygiene codes, HACCP, ISO 9000 family, ISO 22000 and others. Quality assurance systems and Food Safety. Traceability in the soil-plant-animal-food-human chains. Risk and risk assessment in the food chain.

### Required reading materials

*Luning, P. A.-Devlieghere, F.-Verhé, R.: Safety in the agri-food chain*

Wageningen Academic Publishers, 2007.

*Alli I.: Food Quality Assurance. Principles and Practices*

CRC Press, 2004.

*R. Beier, S. pillai, T. Phillips, r. Ziprin: Preharvest and Postharvest Food Safety.*

Blackwell Publishing Ltd., 2004.

*Evans J. R. -Lindsay W. M.: The management and Control of Quality.*

West Publishing, 1993.

Subject: **SECTORAL ECONOMY II.**

Year, Semester: 2<sup>nd</sup> year/2<sup>nd</sup> semester

Lecture: **2**

Practical: **1**

## Requirements

Short course description:

Economic and managerial questions of the crop production, international outline, european review, macroeconomic approach in Hungary. Fixed assets, current assets, human workload. Cost-benefit analysis, income, natural and economic efficiency in the sector. Regulations, subsidy in agriculture. Elaboration of the technological and business plan in a certain crop sector.

### Required reading materials

*T. K. Wolfe: Production of field Crops; A Textbook of agronomy*

International Book Distrurbing Co., Pub., 2004. ISBN: 8187421355

*Kent D. Olson: Farm management, Principles and Strategies*

Iowa State University Press, 2003. ISBN: 9780813804187

*Nábrádi A.-Takácsné Gy. K.-Pupos T.: Üzemtan I, Üzemtan II.*

Debreceni Egyetem Agrártudományi centrum, 2007. ISBN: 987-963-9732-70-4

## Animal Genetics Laboratory

Subject: **ANIMAL HUSBANDRY POLITICS**

Year, Semester: 2<sup>nd</sup> year/2<sup>nd</sup> semester

Lecture: **1**

Practical: **1**

### Requirements

Short course description:

Directions, tools, results of developing animal breeding. Definition and areas of animal breeding policy; relationship between agricultural policy and animal breeding policy. Reasons for the quantitative development of animal breeding and directions of the development. Importance and role of the Hungarian animal husbandry in the animal husbandry of the EU. Ratio of species and its regulation in animal husbandry, determination of the production, profitability. Estate structure of animal husbandry, concentration of livestock. Animal husbandry activities of farmers, planning. Funding of animal husbandry in the EU, national funding system. Enactment and setting up regulations in animal husbandry, laws and regulations in the operating animal husbandry. Safeguarding and harmonization of interest in animal husbandry. Profit harmonization between the participants of animal husbandry. Methods and tools of the qualitative development of animal husbandry. International co-operation in animal husbandry. Share of animal husbandry within agricultural production. Special tasks of animal husbandry (nature conservation, environmental protection). Organization of animal husbandry, its bodies and their policy. Animal husbandry policy of farmers.

### Required reading materials

*Geers, R.: Livestock production and society*

Wageningen, 2006.

## Department of Animal Husbandry

Subject: **ANIMAL HUSBANDRY III.**

Year, Semester: 2<sup>nd</sup> year/2<sup>nd</sup> semester

Lecture: **2**

Practical: **1**

### Requirements

Short course description:

Recent situation of cattle breeding in the world, European Union, Hungary and its analyses. Genetic background for milk and meat production, tendencies of breed policy in the world. Analyses of different housing technologies for milk and meat production, characterization of modern systems. Feeding for intensive milk production, feed additives in cattle nutrition. Methods for the breeding value evaluation in cattle. Selection systems for mating. Recent advantages of molecular biology in the efficiency of breeding. Organisations in breeding programmes. Gene preservation in cattle breeding, native breeds. Biological production, functional foods in cattle production systems.

### Required reading materials

*H. Tyler, M. E. Ensminger: Dair Cattle Science*

## CHAPTER 10

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Prentice Hall, 2005.

*H. S. Thomas: Storey's Guide to Raising Beef Cattle*

3. Storey Publishing, LLC,

## Department of Landscape Ecology

Subject: **INTEGRATED CROP PRODUCTION III.**

Year, Semester: 2<sup>nd</sup> year/2<sup>nd</sup> semester

Lecture: **2**

Practical: **1**

### Requirements

Short course description:

Elements of integrated oil crop models and their interactive effects. Sustainable crop managements of sunflower, colza and other oil crops. Integrated crop managements of root and tuber crops. Crop models of other industrial crops. Integrated crop models of different fodder crops. Crop production models for quality of oil, root-tuber, industrial and fodder crops and their interdiscipline, complex evaluation. Food safety and logistics demands and tasks of oil, root-tuber, industrial and fodder integrated crop models.

### Required reading materials

*Jr., J. Benton Jones: Agronomic Handbook: Management of Crops, Soils and Their Fertility*  
CRC Press., 2002.

*Allen V. Barker, David J. Pilbeam: Handbook of Plant Nutrition*  
CRC Press., 2006.

*Milkha Aulakh., Cyntia A. Grant: Integrated Nutrient Management for Sustainable Crop Production*  
CRC Press., 2008.

Subject: **REGIONAL FARMING**

Year, Semester: 2<sup>nd</sup> year/2<sup>nd</sup> semester

Lecture: **1**

Practical: **1**

### Requirements

Short course description:

Learning of such professional knowledge, which makes possible the effective, economical crop production, adapting to the site region. Agroecological regions. Adapting to the region and the site. Possibilities, conditions to improve the site circumstances. To develop the species and variety structure adapting to regional production. Role and possibilities of nutrient management, land cultivation, soil protection, crop protection in regional production.

### Required reading materials

*Jr., J. Benton Jones: Agronomic Handbook: Management of Crops, Soils and Their Fertility*  
CRC Press., 2002.

*John Martin, Warren Leonard, David Stamp, Richard Waldren: Principles of field Crop Production*  
2005. ISBN: 9780130259677