

List of courses, BSc in Horticultural Engineering

Module/Title	Code	Lecturer	ECTS Credit	Contact hours/week
1st Fall semester				
Agrometeorology and Water Management	3KT23NAK01B	Dr. László Bozó	4	2+2
Applied informatics	3MI09NAK38B	Dr. Márta Ladányi	3	1+2
Biophysics	3MT17NAK04B	Dr. György Csima	3	2+1
Plant Genetics	3GN18NAK16B	Dr. Attila Hegedűs	3	2+1
Horticultural Chemistry				
Plant Morphology	3NT20NAK22B	Dr. Zsolt Erős-Honti	6	2+2
Physical Education	1TN55NAK01B	Péter Kovács		0+2
Bridging Course	3DH28NAK18B			
2nd Spring semester				
Agricultural Economics and Rural Development	3MM11NAK86B	Dr. Ernő Péter Botos	3	1+1
Mathematics	3MI09NAK05B	Dr. Itzész András	3	1+2
Basic Knowledge in Technique and in Labour Safety	3MT17NAK02B	Dr. György Csima	4	2+1
Plant Biochemistry and Plant Physiology	3MN24NAK02B	Dr. István Papp	5	3+2
Plant Systematics and Taxonomy	3NT20NAK23B	Dr. Mária Höhn	5	2+2
Soil science and Agrochemistry	3KT23NAK03B	Dr. Levente Kardos	5	2+2
Physical Education	1TN55NAK02B	Péter Kovács		0+2
3rd Fall semester				
Woody Plant Nursery	3GY15NAK03B	Prof. Dr. Károly Hrotkó	4	2+1
Soil Management	3OG55NAK41B	Péter Pusztai	4	2+1
Fruit Species and Varieties	3GY15NAK04B	Dr. László Szalay	4	2+2
Horticultural machines, tools and technologies	3MT17NAK07B	András Jung	5	2+2
Economics	4MI25NAK01B			
Plant Biotechnology	3MN24NAK03B	Dr. István Papp	3	2+2
Encyclopedia of Crop Production and Animal Husbandry	3OG55NAK07B	Dr. Izóra Gál	4	4+0
Summer practice	3KU50NAK05B	Dr. Zsuzsanna Pluhár	0	
4th Spring semester				
Biometrics	3MI09NAK39B	Dr. Márta Ladányi	3	1+2
Medicinal Plants and Spices	3ME13NAK01B	Dr. Zsuzsanna Pluhár	4	2+2
Fruit Production	3GY15NAK05B	Dr. Gergely Simon	4	2+2

Applied entomology	3RT07NAK01B	Dr. Béla Péntzes	3	2+2
Outdoor Cultivation of Ornamental Plants	3DD02NAK01B	Assist. Prof. Magdolna Sütöri-Diószegi	4	2+2
Viticulture	3SZ22NAK01B	Dr. Borbála Bálo	4	2+2
Principles of Vegetable Production	3ZT14NAK02B	?	4	2+2
5th Fall semester				
Medicinal Plant Production	3ME13NAK02B	Dr. Éva Zámbari-Németh	4	2+2
Cultivation of Greenhouse Ornamentals	3DD02NAK03B	Assoc. Prof. Dr. Péter Honfi	4	2+2
Plant Pathology	3NK06NAK02B	Dr. László Palkovics	3	2+2
Organic Farming	3OG55NAK06B	Dr. Zita Szalai	3	3+0
Technology of Viticulture and Enology	3SZ22NAK67B	Dr. István Fazekas	4	2+2
Vegetable Production Technologies	3ZT14NAK04B	Dr. Katalin Slezák	4	2+2
Chosen specialisation I.		instructor of the specialisation	5	1+2
6th Spring semester				
Horticultural Marketing and Quality Management	3MM11NAK87B			
Plant Breeding and Cultivar Registration System	3GN18NAK17B	Dr. Attila Hegedűs	3	4+0
Chosen specialisation II.		instructor of the specialisation	5	0+2
Internship			30	15 weeks
7th Fall semester				
Integrated Pest Management	3NK06NAK03B	Dr. László Palkovics	5	3+0
Accounting, Finance	3MM11NAK08B			
Farm Management and Economics	3MM11NAK88B			
Chosen specialisation III.		instructor of the specialisation	5	0+4
Thesis preparation			15	4 weeks

Course descriptions

Title	Agrometeorology and Water Management
Code	3KT23NAK01B
Prerequisites	
Description	History and present composition of the atmosphere is discussed. The role of solar radiation in atmospheric motions as well as in the conditions of biosphere is presented. A detailed description is provided on the atmospheric part of water

	cycle, including its close connection to soil conditions and agricultural activity. Climatic zones of the Earth are generally presented. It is discussed, how the anthropogenic activity can influence the chemical composition of the atmosphere and land-use characteristics. Responses of natural systems to environmental changes are demonstrated and discussed. Processes of the hydrology and detailed description of water balance of fields are discussed. Tasks and methods of agricultural water management, including drainage, water storage, irrigation are presented. Calculation methods of water demand for plants and water deficit in soils are presented. During the practical course, a meteorological observatory and a meteorological forecast team are to be visited and agrohydrological and agrometeorological data processing and evaluation are discussed		
Lecturer	Dr. László Bozó, Dr. Katalin Juhos		
Semester	1st, spring	Contact hours/week	2+2
Level	BSc	ECTS	4
Teaching and Learning Methods:	<ul style="list-style-type: none"> • 1 day field practice • keeping a self-presentation in the topic "Recent and future environmental challenges in my country" during the term period; written exam during the exam period 		
Reading:	<ul style="list-style-type: none"> • Mészáros E. (1993): Global and Regional Changes in Atmospheric Composition. Lewis Publishers, U.S.A. • FAO (2011): The state of the world's land and water resources for food and agriculture (SOLAW) – Managing systems at risk. Food and Agriculture Organization of the United Nations, Rome and Earthscan, London. http://www.fao.org/docrep/017/i1688e/i1688e.pdf • FAO (1986): Irrigation Water Management: Irrigation Water Needs. Training Manual No 3. Food and Agriculture Organization of the United Nations, Rome http://www.fao.org/docrep/S2022E/s2022e00.htm • FAO (1986): Irrigation Water Management: Methods. Training Manual No5. Food and Agriculture Organization of the United Nations, Rome, http://www.fao.org/docrep/s8684e/s8684e00.htm#Contents • Zsembeli J. and Juhász Cs. (2011): Water management. University of Debrecen, Debrecen. http://www.tankonyvtar.hu/hu/tartalom/tamop425/0032_vizgazdalkodas/ch02.html 		
Assessment:	exam		

Title	Applied informatics		
Code	3MI09NAK38B		
Prerequisites			
Description	During the semester, students receive training in basic informatics, knowledge of which is essential in their agricultural studies. Seminars are organized in a computer laboratory		
Lecturer	Dr. Márta Ladányi, Péter Fejes Tóth, Ildikó Mesterházy		
Semester	1st, fall	Contact hours/week	
Level	BSc	ECTS	
Teaching and Learning			

Methods:	
Reading:	
Assessment:	Computerized practical exam on data management and processing techniques, studied during the semester

Title	Biophysics		
Code	3MT17NAK04B		
Prerequisites			
Description	The course is introducing the physical bases of transport processes in plants and describing the relationships these processes and their conclusions. The subject is dealing with most of physical parameters of horticultural production both in field and in greenhouse, and help to understand the definition of theoretical parameters, methods of physical measurement.		
Lecturer	Dr. György Csima, Zsófia Varga		
Semester	1st, fall	Contact hours/week	2+1
Level	BSc	ECTS	3
Teaching and Learning Methods:	2 hours practical unit in every second week		
Reading:	The English language course lectures will be available in pdf version (teszt.elearning.szie.hu) (in Hungarian language: dr. Nagy Sándor - Sinóros-Szabó Botond: A bio- és környezetfizika alapjai)		
Assessment:	<ul style="list-style-type: none"> • completion of a midterm exam and three practical assignments • colloquium 		

Title	Plant Genetics		
Code	3GN18NAK16B		
Prerequisites	-		
Description	Genetics is a fast-developing science that has an ever-increasing effect on human life. Foundations and basic rules of genetics will be provided in the course. Topics in molecular background of inheritance and expression of phenotypic characters will be also covered. Students will learn aspects of both molecular and classical genetics that are especially relevant for horticultural crop plants. This information forms a strong basis of the biological background of plant growing, plant protection, classical and molecular breeding and biotechnology. Knowledge of the Plant Genetics course will help students understand deeper courses in special fields of modern genetics (structural and functional genomics, developmental and reproductive genetics, and genetic engineering) at the MSc level.		
Lecturer	Dr. Attila Hegedűs, Júlia Halász, Zsuzsanna Benyóné György, Róbert Oláh		
Semester	1st, fall	Contact hours/week	2+3
Level	BSc	ECTS	3
Teaching and Learning Methods:	Learning the topics delivered in the lectures and practical units, having at least satisfactory mark for the written exam completed during the semester, participation in practical units		
Reading:	<ul style="list-style-type: none"> • Recommended readings: 		

	Acquaah, G. (2009). Principles of plant genetics and breeding. John Wiley & Sons.
Assessment:	oral exam

Title	Horticultural Chemistry		
Code			
Prerequisites			
Description			
Lecturer			
Semester	1st, fall	Contact hours/week	
Level	BSc	ECTS	
Teaching and Learning Methods:			
Reading:			
Assessment:			

Title	Plant Morphology		
Code	3NT20NAK22B		
Prerequisites	-		
Description	Relationship between structure and function at different levels (cell, tissue, organs) of plant organisation. Anatomical and morphological aspects of plant reproduction. Morphological traits used for describing the plant characteristics. Besides, students get acquainted with the basics of plant systematics, and gets a basic knowledge in the most important plant species.		
Lecturer	Zsolt Erős-Honti, Mária Höhn, Sándor Barabás, Endre Tóth		
Semester	1st, fall	Contact hours/week	2+2
Level	BSc	ECTS	6
Teaching and Learning Methods:	Most important tasks that should be fulfilled are written tests, species recognition and the elaboration of morphological and herbarium collections		
Reading:	<p>Compulsory readings:</p> <ul style="list-style-type: none"> Digital learning material <p>Recommended readings:</p> <ul style="list-style-type: none"> James D. Mauseth (2008): Plant Anatomy. The Blackburn Press David F. Cutler, Ted Botha, Dennis Wm. Stevenson (2007): Plant Anatomy: An Applied Approach. Wiley-Blackwell 		
Assessment:	For the signature closing the labour practise: written tests, herbarium collection. At the exam: questions on basic knowledge, written test and oral exam based on the students' own morphological collection		

Title	Agricultural Economics and Rural Development
--------------	--

Code	3MM11NAK86B		
Prerequisites	-		
Description	The aim of the course is to provide basic knowledge in agricultural economics and policies. The main issues of the national and EU agricultural policies will also be introduced. Principles of domestic and EU rural and regional development will also be discussed.		
Lecturer	Dr. Ernő Péter Botos		
Semester	2nd, spring	Contact hours/week	1+1
Level	BSc	ECTS	3
Teaching and Learning Methods:	Active participation at lectures. Curriculum and specified readings.		
Reading:	Recommended readings: <ul style="list-style-type: none"> • Buday-Sántha Attila: Agrár- és vidékpolitika, SALDO Pénzügyi Tanácsadó és Informatikai Zrt., Budapest, 2011 • Jámbor Attila—Mizik Tamás: Bevezetés a Közös Agrárpolitikába, Akadémiai Kiadó, Budapest 2014 • Vidékfejlesztési Program kézikönyv 2014-2020 NAK honlapja. http://www.nak.hu/hu/egyseges-kerelem-gazdalkodoi-kezikonyvek/3128--50/file • HVG, Figyelő, Gazdálkodás folyóirat • http://www.kormany.hu/hu/videkfejlesztési-miniszterium 		
Assessment:	Written exams based on specified exam theses. Activity at lectures (10%), written exam (90%)		

Title	Mathematics		
Code	3MI09NAK05B		
Prerequisites			
Description	During the semester, students receive training in basic informatics, knowledge of which is essential in their agricultural studies. Seminars are organized in a computer laboratory.		
Lecturer	Dr. Andás Iltzész, Péter Fejes Tóth lecturer, Ildikó Mesterházy lecturer		
Semester	2nd spring	Contact hours/week	1+2
Level	BSc	ECTS	3
Teaching and Learning Methods:			
Reading:			
Assessment:	Practical exam Mathematics from the topics studied during the semester		

Title	Basic Knowledge in Technique and in Labour Safety		
Code	3MT17NAK02B		
Prerequisites	-		
Description	The course is introducing to technical and labor safety bases, providing knowledge into the machine and tool representation rules of standard machine elements,		

	strength of the system design, the engines and machines to basics. The subject is dealing with most of technical aspects of horticultural, agricultural machinery and power machines.		
Lecturer	Dr. György Csima, Dr. László Matus		
Semester	2nd, spring	Contact hours/week	2+1
Level	BSc	ECTS	4
Teaching and Learning Methods:	2 hours practical unit in every second week		
Reading:	The English language course lectures will available in pdf version (teszt.elearning.szie.hu). (compulsory readings in Hungarian language: dr. Láng Zoltán (2007): Műszaki alapismeretek. BCE-KeTK és Mezőgazda Kiadó, 237 p.)		
Assessment:	<ul style="list-style-type: none"> • colloquium • facultative midterm exam 		

Title	Plant Biochemistry and Plant Physiology		
Code	3MN24NAK02B		
Prerequisites	Chemistry		
Description	The course deals with the most important metabolic and physiological processes of plants with their biochemical bases elucidated. During the course students gain theoretical knowledge and practical experience about the most important life processes of plants.		
Lecturer	Dr. István Papp, Dr. Erzsébet Kissné Bába, Dr. Anita Szegő		
Semester	2nd, spring	Contact hours/week	3+2
Level	BSc	ECTS	5
Teaching and Learning Methods:			
Reading:	<ul style="list-style-type: none"> • Compulsory readings: Lehninger: Principles of Biochemistry, Taiz and Zeiger: Plant Physiology • Recommended readings: Biochemistry and Molecular Biology of Plants, Eds Buchanan and Gruissen 		
Assessment:	<ul style="list-style-type: none"> • examination is permitted pending on successful completion of the laboratory practicals which include a written classroom test • final marks are formed from written (biochemistry) and oral (physiology) parts of examination 		

Title	Plant Systematics and Taxonomy		
Code	3NT20NAK23B		
Prerequisites	Plant Morphology		
Description	Background of plant systematics: historical and modern systems including theory of cladistics. Nomenclature of native and cultivated taxa. Recent molecular based phylogeny of plants (APGIII): description and overview of the plant families and taxa therein with special account on their horticultural importance		
Lecturer	Mária Höhn, Sándor Barabás, Zsolt Erős-Honti, Endre György Tóth		

Semester	2nd, spring	Contact hours/week	2+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	Students should get acquainted with the topic elaborated during the lectures and should become familiar with plant species presented during the practical by proceeding the information on their taxonomical characteristics, distribution and use.		
Reading:	<p>Compulsory readings:</p> <ul style="list-style-type: none"> - Heywood, V. H., Brummitt, R. K., Culham, A., Seberg, O. (2007): Flowering Plant families of the World. Firefly Books, Ontario, Canada. - APGIII. http://www.mobot.org/MOBOT/research/APweb/ <p>Recommended readings:</p> <ul style="list-style-type: none"> - Bresinsky, A., Körner, C., Kadereit, J.W., Neuhaus, G., Sonnewald, U. (2013): Strasburger's Plant Sciences. 		
Assessment:	<ul style="list-style-type: none"> • For getting the signature at the end of the semester: successfully written tests, prepared herbarium collection and finally to cumulate the min. achievable credit points (50%). • Exam: written test and oral exam based on the students' own herbarium collection. 		

Title	Soil Science and Agrochemistry		
Code	3KT23NAK03B		
Prerequisites	-		
Description	The main topics in soil sciences and in plant nutrition will be addressed		
Lecturer	Bo		
Semester	2nd, spring	Contact hours/week	2+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	Participation on lectures are strongly recommended. The participation on the practical lessons is obligatory. Positive evaluation (at list 51% of the minute book and laboratory test-paper) is necessary for accepting the course participation. The preparation of Minute book is obligatory.		
Reading:	<p>Compulsory readings:</p> <ul style="list-style-type: none"> • KhanTowhidOsman (2013): The soils. Principles, properties and management. Springer, ISBN 978-94-007-5663-2 (eBook) <p>Recommended readings:</p> <ul style="list-style-type: none"> • MiroslavKutílek • Donald R. Nielsen (2015): Soil. The skin of the planet Earth. Springer. ISBN 978-94-017-9789-4 (eBook) • Eldor A. Paul (ed.) (2007): Soil microbiology, ecology and biochemistry. Academic Press, Elsevier. E-book, ISBN 13: 978-0-12-546807-7 • Füleky, Gy. (eds.) (1999): Tápanyag-gazdálkodás (Plant-nutrition, in Hungarian). MezőgazdaKiadó. Budapest 		
Assessment:	Terminal exams will be scored by a 100 point-test and marked on its results, starting from 51% as the least accepted value.		

Title	Woody Plant Nursery		
Code	3GY15NAK03B		
Prerequisites	-		
Description	Students get introduction to propagation and raising of trees and shrubs as follows: Introduction to propagation and raising of trees and shrubs. Stockplant management, virus-free nuclear stock of fruit trees and vinegrape. Seed orchard and seedling production. Technology of rooting of cuttings, layering, stoolbed management. Budding and grafting methods, raising of grafts. Rootstocks. Container growing systems. Tree production. Bush rose and shrub production. Conifer production. Fruit tree and soft fruit planting material. Lifting and storing of hardy nursery stock.		
Lecturer	Prof. Dr. Károly Hrotkó, Dr. Veronika Szabó, Dr. Márta Gyeviki, Lajos Magyar		
Semester	3rd, fall	Contact hours/week	2+1
Level	BSc	ECTS	4
Teaching and Learning Methods:	<ul style="list-style-type: none"> - participation in technical tours (2 times) - participation in the lectures and practices (apply the Study and Exam Rules of SZIU) - achieved minimum level in test exam (60%) - presentation about a propagation and nursery topic in 10 minutes 		
Reading:	<ul style="list-style-type: none"> • Compulsory readings: PPT files of lectures (see website of the department) Stanley, J. and Toogood, A. 1981. The Modern Nurseryman. Faber and Faber, London. Harmann, H.T., Kester, D. E., Davies, F.T. and Geneve, R.L: 2002 Plant propagation, Prentice-Hall Inc. (selected topics) • Recommended readings: Harmann, H.T., Kester, D. E., Davies, F.T. és Geneve, R.L: 2002 Plant propagation, Prentice-Hall Inc. Garner, R.J. és Chaudhry, S.A. 1976. The propagation of tropical fruit trees. CAB International. Krüssmann, G. 1996. Die Baumschule. Verlag Paul Parey, Berlin-Hamburg. 		
Assessment:	Students fulfilling the requirements of the semester will be examined verbal. Requirements: students should show skills in knowledge provided in lectures and practices. Oral exam in randomly selected topics.		

Title	Soil management		
Code	3OG55NAK41B		
Prerequisites			
Description	The aim of the course is to provide knowledge about agricultural and horticultural production as well as their soil management systems; environmental factors influencing production and ways we can manage these factors. Practical knowledge can be acquired about the evaluation of soil tillage quality and designing/analysing weed surveys		
Lecturer	Péter Pusztai		
Semester	3rd, fall	Contact hours/week	2+1

Level	BSc	ECTS	4
Teaching and Learning Methods:	fulfilment of field practice		
Reading:	Recommended literature: Birkás M (2008): Environmentally-sound adaptable tillage. Akadémiai Kiadó, ISBN 978 963 05 8631 3 <i>static.akkrt.hu/media/2/2/1/3/4/22134.pdf</i>		
Assessment:	written and oral		

Title	Fruit Species and Varieties		
Code	3GY15NAK04B		
Prerequisites	-		
Description	The cultivar is one of the main factors of fruit production. The aim of the subject is to familiarize the students with the most important fruit species and cultivars of Hungary, and the cultivar use of the world, and Europe. The students get knowledge about the morphology, biological characteristics, and ecological needs of fruit species, and they get to know about the processing, pomological features, and market values of fruit cultivars. Special attention is paid for preparing the students to use their knowledge in the practice as well.		
Lecturer	Dr. László Szalay, Dr. Ficzek Gitta, Dr. Kovács Szilvia, Papp Dávid, Dr. Tóth Magdolna		
Semester	3rd, fall	Contact hours/week	2+2
Level	BSc	ECTS	4
Teaching and Learning Methods:			
Reading:			
Assessment:	<ul style="list-style-type: none"> The final mark is given based on the students' performance on the class, and the results of the minimal and elaborative questions. Final exam, covering the whole teaching material. This is a written exam, and have two parts: <ol style="list-style-type: none"> Ten (minimal) questions testing the ability of identification Ten short elaborative questions <p>Fulfilling 51% of the first part is required for the second part. However, in the case of repeat or corrective exam, the first part does not have to be repeated if it was already fulfilled.</p> <ul style="list-style-type: none"> The final mark is calculated by summarizing the following partial points: <ul style="list-style-type: none"> - presentation or/and essay: 10% - written exam (during the semester): 20% - minimal questions: 20% - elaborative questions: 50% 		

Title	Horticultural machines, tools and technologies		
Code	3MT17NAK07B		
Prerequisites	Basic technical knowledge and work safety		

Description	The subject is dealing with most of technical aspects of horticultural production both in field and in greenhouse. Machines, tools and technologies will be presented in text, slides, videos and during field practice.		
Lecturer	András Jung		
Semester	3rd, fall	Contact hours/week	2+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	completion a midterm task, a home assignment, and of the field practice		
Reading:	<ul style="list-style-type: none"> • Compulsory readings: Hegybíró M. Kurtán S., <u>Láng Z.</u>, Nagy S., Wieser A. 2013: Special Technical Knowledge in Horticulture. In: É. N. Zámoriné, Sz. Sárosi, L. Horváth : Modern Horticulture. Corvinus University of Budapest, Faculty of Horticultural Science, 2013. • Recommended readings: CIGR Handbook of Agricultural Engineering Volume III 		
Assessment:	colloquium		

Title	Economics		
Code			
Prerequisites			
Description			
Lecturer			
Semester		Contact hours/week	
Level		ECTS	
Teaching and Learning Methods:			
Reading:			
Assessment:			

Title	Plant Biotechnology		
Code	3MN24NAK03B		
Prerequisites	Plant Biochemistry and Plant Physiology, Plant Genetics		
Description	The course deals with the most important techniques, achievements and underlying theory of plant biotechnology. During the course students gain theoretical and practical knowledge about the most important techniques of modern biotechnological applications used commercially for crops.		
Lecturer	Dr. István Papp, Dr. Attila Hegedűs, Dr. Júlia Halász, Dr. Zsuzsanna György, Dr. Erzsébet Kissné Bába, Dr. Anita Szegő		
Semester	3rd, fall	Contact hours/week	2+2
Level	BSc	ECTS	3
Teaching and Learning Methods:	examination is permitted pending on successful completion of practical studies including a written classroom test		
Reading:	Compulsory readings: Plant Development and Biotechnology 2000 Trigiano and Gray, CRC Press		

	Recommended readings: Plant Biotechnology and Agriculture 2012 Eds Altman and Hasegawa, Academic Press
Assessment:	written examination

Title	Encyclopedia of Crop Production and Animal Husbandry		
Code	3OG55NAK07B		
Prerequisites			
Description	The course provides basic knowledge about agricultural production with special focus on arable crop production and animal husbandry, which allows to recognize attachment points with horticultural production.		
Lecturer	Dr. Izóra Gál, Dr. Péter Pusztai		
Semester	3rd, fall	Contact hours/week	4+0
Level	BSc	ECTS	4
Teaching and Learning Methods:	field practice		
Reading:	Recommended literature: Briggs S. (2008): Organic Cereal and Pulse Production. The Crowood Press. ISBN 978 1 86126 953 9		
Assessment:	written and oral		

Title	Biometrics		
Code	3MI09NAK39B		
Prerequisites	Basic mathematics and informatics		
Description	During the semester, students receive training in basic statistical methods, knowledge of which is essential in their agricultural studies. Students gain theoretical and practical skills to design and evaluate experiments in horticultural science. Free and open access R statistical software (RGui surface) and its complementary R package called Commander are used during the semester. Statistical methods are discussed with several applications in biometrics in a practical and interactive way. Seminars are organized in a computer laboratory.		
Lecturer	Dr. Ladányi Márta associate professor, László Anna lecturer, Reiczigel Zsófia lecturer		
Semester	4th, spring	Contact hours/week	1+2
Level	BSc	ECTS	3
Teaching and Learning Methods:			
Reading:			
Assessment:	Grades are given upon a student project report submitted at the end of the semester.		

Title	Medicinal Plants and Spices		
Code	3ME13NAK01B		
Prerequisites			
Description	The main purpose of the course is to introduce the students into the general		

	aspects of the medicinal plant production systems and to provide specific knowledge in the fields of wild-growing and exotic medicinal plants and spices. Beside the theoretical knowledge, practical skills are also demonstrated. The most important medicinal plant species, their drugs, active substances and application areas (phytotherapy, healing cosmetics, dietary supplements) are included as subjects of the lectures and practical parts of the course. Concerning the production systems of medicinal plants, students will get acquainted with general aspects of collection from wild habitats, cultivation, primary processing procedures, trade, quality control and quality assurance systems (GAP, GMP, etc).		
Lecturer	Éva Zámoriné Németh, Zsuzsanna Pluhár, Krisztina Szabó, Beáta Gosztola, Péter Radácsi, Katalin Inotai, Szilvia Tavaszi-Sárosi, Sára Kindlovits		
Semester	4th, spring	Contact hours/week	2+2
Level	BSc	ECTS	4
Teaching and Learning Methods:	attendance on the practical lessons and participation in field trips and practices. recognition of medicinal and aromatic plants		
Reading:	<ul style="list-style-type: none"> • Compulsory readings: Bernáth J.-Németh É.: Gyógy-és fűszernövények gyűjtése, termesztése és felhasználása. Mezőgazda Kiadó, Budapest (ISBN 978-963-286-493-8) • Recommended readings: Bernáth J. (szerk.) (2013): Vadon termő és termesztett gyógynövények. Mezőgazda, Budapest (ISBN 978-963-286-674-1) 		
Assessment:	written and oral exam		

Title	Fruit Production		
Code	3GY15NAK05B		
Prerequisites	Woody plant nursery, Fruit species and varieties		
Description	The subject summarizes the knowledge about the growing of temperate zone fruits. It is focusing to the practice oriented questions of modern fruit growing. The most important factors of competitive, high quality fruit growing are overviewed. The variants of commercial growing technologies are shown; prioritizing the methods of integrated fruit growing. The aspects of ecology, environment-, and human health preservation have important role in the teaching of the subject. The ecological conditions are basically determining the efficiency of commercial fruit growing, so the requirements of growing conditions have special role in the teaching material. The modernization of growing systems and technologies are the key of the development of fruit growing. Accordingly, when the growing of any species is discussed we are focusing to the modern growing systems, and the new methods of growing technologies.		
Lecturer	Dr. Gergely Simon		
Semester	4th, spring	Contact hours/week	2+2
Level	BSc	ECTS	4
Teaching and Learning Methods:	Participation on the lectures, and on the field/classroom practices. Participating on the interim exam.		
Reading:			
Assessment:	The result of the interim exam counts as 30%. The result of the written exam counts as 70% of the final mark.		

Title	Applied Entomology		
Code	3RT07NAK01B		
Prerequisites	Botany		
Description	Students learn to discriminate 8 arthropod orders and 37 families of horticultural pests, understand the biology, behaviour, and ecology of 53 key pests in horticulture. Students are expected to recognize these 53 key pest species in their adult form or based on their damage symptoms, as well as 9 larval and 3 pupal forms of holometabolous insects. Students will also understand the different tactics used in horticultural pest-management programs, understand the biology, behaviour and ecology of key natural enemies of pests, learn control tactics for managing pests and their advantages and limitations, gain an understanding of pest management in several model systems including grapevine, fruit, vegetable and ornamental crops. Recognition of these key pests and their damage symptoms will be a major part of the exam. In the second part of the exam the student will prove his/her knowledge about the management tactics of key horticultural pests.		
Lecturer	Dr. Béla Péntzes, Dr. Gábor Véték, Dr. József Fail		
Semester	4th, spring	Contact hours/week	3
Level	BSc	ECTS	2+2
Teaching and Learning Methods:	Regular attendance of the lessons		
Reading:	<p>Compulsory readings: van Emden H.F. (2013): Handbook of agricultural entomology. John Wiley and Sons, Chichester, West Sussex, UK, pp. 312.</p> <p>Recommended readings: Radcliffe E.B., Hutchison W.D. and Cancelado R.E. (eds.)(2008): Integrated pest management: concepts, tactics, strategies and case studies. Cambridge University Press, Cambridge, UK, pp. 529. Peshin R. and Pimentel D. (eds.) (2014): Integrated pest management Vol. 4.: Experiences with implementation, global overview. Springer, Dordrecht, The Netherlands, pp. 574.</p>		
Assessment:	Written and oral exams		

Title	Outdoor Cultivation of Ornamental Plants		
Code	3DD02NAK01B		
Prerequisites	Performance of Plant Systematics and Taxonomy subject on minimum sufficient (2) level. Students are able to take on the subject parallel but are allowed to enter the examination only after the successful performance of the Plant taxonomy subject.		
Description	The aim of course is to provides knowledge about morfological and physiological specialities, ecological requirements and growing of openground woody ornamentals and perennials.		
Lecturer	Dr.Károly Hrotkó, Dr. Andrea Tilly-Mándy, Dr. Ildikó Kohut, Dr. Magdolna Sütöri-Diószegi, Dr. István Dániel Mosonyi, Dr. Máté Ördögh		
Semester	4th, spring	Contact hours/week	2+2

Level	BSc	ECTS	4
Teaching and Learning Methods:	<ul style="list-style-type: none"> • Past the plant identification tests: <ul style="list-style-type: none"> ○ Evergreens ○ Deciduous ornamental trees and shrubs ○ Perennials • Participation in practices and filed practices 		
Reading:	Recommended readings: <ul style="list-style-type: none"> • Bärtels, A. : Das große Buch der Ziergehölze. Verlag Eugen Ulmer, Stuttgart, Germany, 1995. • Dirr, M. : Manual of Woody Landscape Plants., 2001. • Griffiths M. : Index of Garden Plants. MacMillan Press Ltd., London, 1994. • Krüssmann, G.: Manual of Cultivated Conifers. Timber Press, Portland, Or. USA. 1985. • Krüssmann, G.: Manual of Cultivated Broad-leaved Trees and Shrubs. Timber Press, Portland, Or., USA. 1989. • Krüssmann, G.: Manual of Woody Landscape Plants. Stipes Publ. Company, Champaign, Illinois, USA., 1990. • Rehder, A.: Manual of Cultivated Trees and Shrubs Hardy in North Amerika. Dioscorides Press, Portland, Oregon, USA, 1990. 		
Assessment:	Written and oral examination in the examination period		

Title	Viticulture		
Code	3SZ22NAK01B		
Prerequisites			
Description	<p>During the course we present the domestic and international status, importance and production data of the grapevine growing. We describe the origin and spread of grapes on Earth. During this training the history of the Hungarian viticulture will be presented in detail. We learn the life stages of the grapevine, the annual cycle of its life. The students will get acquainted with the ecological bases of vineyards. They get theoretical and practical training on the basics of grape propagation, grafting and its technology, and learn about the most important standards, simple cellar operations.</p>		
Lecturer	Dr. Borbála Bálo, dr. György Bisztray, dr. István Fazekas, dr. Tamás Deák, dr. Péter Bodor, Attila Nagy		
Semester	4th, spring	Contact hours/week	2+2
Level	BSc	ECTS	4
Teaching and Learning Methods:	attendance on the practical lessons and participation in field trips, successfully completed tests, successfully completed grafting exam		
Reading:	Compulsory literature: Lőrincz A., Sz. Nagy L., Zanathy G. (2015): Szőlőtermesztés. Mezőgazda Kiadó (Budapest). ISBN:978-963-286-712-0, pp. 531.		
Assessment:	written exam		

Title	Principles of Vegetable Production		
Code	3ZT14NAK02B		

Prerequisites			
Description	During the course the students learn about the cultivation technologies of the most important vegetable species in Europe. Besides the modern methods, they also get familiar with the traditional ways of cultivation. Another part of the curriculum is the topic of forcing, vegetable production in green houses. The students learn about the varieties and variety types of the different vegetable species. The detailed introduction of the different species and their production technologies include soil preparation, plant care (plant protection excluded), harvest and post-harvest handling.		
Lecturer			
Semester	4th Spring	Contact hours/week	2+2
Level	BSc	ECTS	4
Teaching and Learning Methods:			
Reading:	<p>Hodossi S., Kovács A., Terbe I. (szerk.) (2009): Zöldségtermesztés szabadföldön. Budapest. Mezőgazda Kiadó. ISBN: 9789632865386.</p> <p>Terbe I., Hodossi S., Kovács A. (szerk.) (2010): Zöldségtermesztés termesztőberendezésekben. Budapest. Mezőgazda Kiadó. ISBN: 9789632865799. English summaries uploaded to the e-learning portal</p> <p>Rubatzky, V. E., Yamaguchi, M. (1997): World Vegetables. 2nd ITP. New York. Albany. ISBN: 9781461560159</p> <p>Salunkhe, D.K.; Kadam, S.S. (1998): Handbook of Vegetable Science and Technology : Production, Composition, Storage, and Processing Food Science and Technology. New York. CRC Press. ISBN: 9780585158174.</p>		
Assessment:			

Title	Medicinal Plant Production		
Code	3ME13NAK02B		
Prerequisites	basic agricultural technics, botanical knowledge		
Description	The most important cultivated medicinal plants either under garden type or large scale field conditions. Biological and phytochemical characteristics, utilisation, ecological requirements of these species. Specialities of the agrotechnology and postharvest processing, selected varieties and their use. Basics of quality assurance and practical examples. Structural, organisatory and economical characteristics, market specificities of the medicinal plant production, international overview.		
Lecturer	Dr. Éva Zámboi-Németh, Dr. Beáta Gosztola, Dr. Krisztina Szabó, Sára Kindlovits, Dr. Zsuzsanna Pluhár, Dr. Péter Radácsi		
Semester	5th, fall	Contact hours/week	2+2
Level	BSc	ECTS	4
Teaching and Learning Methods:			
Reading:	Compulsory readings: Materials of the lectures and practices		

	<p>Recommended readings: Hornok, L.: Production and processing of medicinal plants, Tankönyvkiadó, Budapest, 1990. Hoppe, B.: Handbuch des Arznei-und Gewürzpflanzenbaues, Band 1,4,5. Saluplanta, e.V. Bernburg (2012-14).</p>
Assessment:	<ul style="list-style-type: none"> • Written exam: on recognition and knowledge of drugs and herbarium specimens, (accepted/unaccepted) • Oral exam: compulsory literature and materials of the lectures and indoor practices are required, the series of possible questions are announced at the departments' website, (1-5 notes)

Title	Plant Pathology		
Code	3NK06NAK02B		
Prerequisites	-		
Description	During the course the students are listening horticultural plants occurring in major diseases skill level knowledge of the target. Based on the knowledge gained in the lectures and laboratory exercises on diseases of horticultural crops the students will be able to recognize diseases safely and they have knowledge how to protect the plants against the pathogens.		
Lecturer	Dr. László Palkovics, Dr. Marietta Petróczy, János Ádám		
Semester	5th, fall	Contact hours/week	2+2
Level	BSc	ECTS	3
Teaching and Learning Methods:			
Reading:	Recommended readings: Agrios GN (ed.): Plant Pathology (4th ed.), Academic Press, San Diego California, 1997.		
Assessment:	2 oral practical exam: basic structure of fungi and diagnostics, own prepared herbarium from diseased plants (40 pieces) and successful oral exam of the herbarium		

Title	Organic farming		
Code	3OG55NAK06B		
Prerequisites	-		
Description	The aim of the course is to be familiar with the description, the principles, and the trends of organic farming and with the system of controlling, qualifying and certifying. Those important principles that regulate this farming system according to EU organic farming decrees will be discussed here. By presenting organic farming the examples of people and communities living energy-efficiently and in harmony with the environment will be introduced here in order to stimulate students to think about their lifestyle and future. The semester includes one day field excursion in an organically managed farm.		
Lecturer	Izóra Gál, Dr. Zita Szalai, Péter Pusztai, Dr. Anna Divéky-Ertsey, Krisztina Madaras		
Semester	5th, fall	Contact hours/week	0+3

Level	BSc	ECTS	3
Teaching and Learning Methods:			
Reading:	<p>Compulsory readings: Lampkin N (1992): Organic Farming. Farming Press Books, Ipswich, UK</p> <p>Recommended readings: Mollison B: Permaculture manual handbook 2001 Tagari kiadó Ausztrália Mollison B. Introduction to permaculture (1991) Tagari kiadó Ausztrália Altieri M: Agroecology (1989) Cambridge University press Whitfield P: How to make a forest garden Permanent publications 1996</p>		
Assessment:	2 written/oral exam		

Title	Technology of Viticulture and Enology		
Code	3SZ22NAK67B		
Prerequisites	Plant anatomy and morphology; Soil science and plant nutrition		
Description	The aim of the course to teach establishing vineyard (planning and laying out the vineyard; the choice of the variety/rootstock, support and training system; planting, training young vines) and vineyard practice (pruning, canopy management, cultivation and weed control, fertilization, irrigation, harvesting). Student need learn the basic of enology too.		
Lecturer	Dr. István Fazekas		
Semester	5th, fall	Contact hours/week	2+2
Level	BSc	ECTS	4
Teaching and Learning Methods:			
Reading:	<p>Compulsory readings: lecture notes</p> <p>Recommended readings: Keller, M. (2015): The Science of Grapevines, Second Edition: Anatomy and Physiology 2nd Edition, Academic Press Jackson, R. (2014): Wine Science, Principles and Applications, 4th Edition. Academic Press, London Skelton, S. (2007): Viticulture - An introduction to commercial grape growing for wine production. Stephen Skelton Rombough, L. (2002): The Grape Grower: A Guide to Organic Viticulture. Chelsea Green Publishing Winkler, A. J., Cook, J. A. , Kliewer, J. M., Lider, L. A. (1974): General Viticulture. University of California Press, California</p>		
Assessment:	written examinations (lecture; practical), grape management task; final written examination		

Title	Vegetable Production Technologies		
Code	3ZT14NAK04B		

Prerequisites	Principles of vegetable production		
Description	Growing technologies of the most important and cultivated vegetable species in Europe. During the lectures the complete cultivation: technological, biological and economical impacts will be discussed. The topics are included the main variety types with description, soil tillage, fertilization, propagation, phytotechnology, harvest, major post-harvest steps. During the course the students will also learn about the cultivation of mushrooms.		
Lecturer	Zoltán Pap PhD, Katalin Slezák PhD, Anna Szabó PhD, András Geösel PhD, Gábor Balázs PhD, Noémi Kappel PhD		
Semester	5th, fall	Contact hours/week	2+2
Level	BSc	ECTS	4
Teaching and Learning Methods:	preparing a vegetable cultivation plan, 2 successful test writing		
Reading:	Maynard, D.N., Hochmuth, G.J. 2007. Knott's Handbook for Vegetable Growers. 5 th ed. John Wiley & Sons. 621 p. Rubatzky, V.E., Yamaguchi, M. (ed.) 1997. World Vegetables. Principles, Production and Nutritive Values. Chapman & Hall. 843 p. Salunkhe, D. K., Kadam, S.S. 1998. Handbook of Vegetable Science and Technology: Production, Composition, Storage, and Processing Food Science and Technology. CRC Press. 721 p.		
Assessment:	test writing + oral		

Title	Specialization I: Horticultural Biotechnology and Plant Breeding		
Code	3MN24NBK31S		
Prerequisites	studies in plant biochemistry and physiology, plant biotechnology		
Description	Preparation for the independent laboratory work, study of the literature connected to the theses.		
Lecturer	Dr. István Papp, Dr. Erzsébet Kissné Bába, Dr. Anita Szegő		
Semester	5th, fall	Contact hours/week	1+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	Laboratory practice. Presentation of the planned experiments.		
Reading:	Compulsory readings: current articles connected to the thesis Recommended readings: Taiz and Zeiger: Plant Physiology		
Assessment:	term mark		

Title	Specialization in Floriculture and Woody Plant Nursery I.		
Code	3DD02NBK89S		
Prerequisites			
Description	Primary aim of the course is to broaden the knowledge of students in their field of specialization with such topics which are not part of the general obligatory curriculum and to become familiar with the method of thesis writing.		
Lecturer	Prof. Dr. Károly Hrotkó Assoc. Prof. Dr. Péter Honfi		

	Assoc. Prof. Dr. Andrea Tilly-Mándy Assist. Prof. Dr. Magdolna Sütöri-Diószegi Dr. Márta Gyeviki assistant lecturer Dr. István Dániel Mosonyi assistant lecturer Dr. Máté Ördögh assistant lecturer		
Semester	5th, fall	Contact hours/week	1+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	during the semester the students are required to -attend the lessons -pass the perennial and deciduous plant identification test -give a short presentation about their thesis topic -accomplish a draft of their thesis (with 15 literature references at least) in writing to a deadline		
Reading:			
Assessment:	fulfilling the course requirements grants a signature		

Title	Spezialization in vegetable growing I.		
Code	3ZT14NBK68S		
Prerequisites	Soil science and agrochemistry, Soil management		
Description	Detailed studies in vegetable production. Learning priority topics.		
Lecturer	Zoltán Pap PhD, Katalin Slezák PhD, Anna Szabó PhD, András Geösel PhD, Gábor Balázs PhD, Noémi Kappel PhD		
Semester	5th, fall	Contact hours/week	1+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	Preparing the thesis topic in one page. This will be correspond to the table of contents of the dissertation. Preparation and presentation of the thesis topic in minimum 8 slides of PP. Finding minimum 15 literature in the thesis topic, preparation the list regarding to the given rules. Preparing one poster in an optional vegetable or mushroom growing topic.		
Reading:			
Assessment:	oral examination		

Title	Specialisation: Medicinal plant production module I.		
Code	3ME13NBK41S		
Prerequisites			
Description	Bases of planning experiments. Exploration of the library's usage at the Department of Medicinal and Aromatic Plants. Basics of literature searching in databases. Rules and requirements of preparing a thesis, examples. Personal consultations on the thesis subject.		
Lecturer	Krisztina Szabó, Péter Radácsi, Beáta Gosztola, Katalin Inotai		
Semester	5th, fall	Contact hours/week	1+2
Level	BSc	ECTS	5

Teaching and Learning Methods:	Presence at the consultations and at the field practices. Preparation of a shortoverview in written form of the thesis topic based on at least 10 references. Collection of 10 herbarium samples of given species.
Reading:	Recommended readings: Hornok, L.: Production and processing of medicinal plants, Tankönyvkiadó, Budapest, 1990. + any further literature provided individually
Assessment:	1-5 notes based on the individual performance during the semester

Title	Specialization in Fruit Growing I.		
Code	3GY15NBK48S		
Prerequisites			
Description	Organization and implementation of the nutrient and water management have an important role in the technical process of fruit growing. The competitive and environmentally friendly farming are based on the skilled practitioner, who works in the orchard, and has an up to date knowledge of this specialization. During the semester, we discuss the nutrient and water management of the orchards in detail, among other things (selection of thesis topics, team building, how to use properly the literature).		
Lecturer	David Papp, Ágnes Molnár		
Semester	5th, fall	Contact hours/week	1+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	Visiting the consultations, according to the Study and Examination Regulations. The teacher's signature is indicating the fulfillment of the interim requirements of the course. Course requirements are to outline the Objectives and the Materials and Methods chapters of the thesis.		
Reading:	Compulsory readings: Jackson, D.I., Looney, N.E. 1999. Temperate and subtropical fruit production. CABI Publishers. Walling UK Recommended readings: Tromp, J., Webster, A-D-, Wertheim, S.J. 2005. Fundamentals of temperate zone tree fruit production. Backhuys Publishers, Leiden. Westwood, M.N. 1993. Temperate-zone pomology. Timber Press. Portland, USA Ryugo, K. 1988. Fruit culture: Its science and art. Jon Wiley and Sons. New York		
Assessment:	practical course mark		

Title	Viticulture specialization module I		
Code	3SZ22NBK38S		
Prerequisites			
Description	Research topics of the Department of Viticulture are presented to the students. Department staff and also PhD students are representing their research and possible thesis topics. The course also includes two full day field trips to varying locations. Thesis topics will be assigned to all students.		
Lecturer	: György Dénes Bisztray, Bálo Borbála, Tamás Deák, Rita Lózsa, Péter Bodor, István Fazekas, György Lukácsy		
Semester	5th, fall	Contact hours/week	1+2

Level	BSc	ECTS	5
Teaching and Learning Methods:	attendance at the lessons, submitting the required essay		
Reading:	Compulsory readings: Presentation slides and handouts Recommended readings: R.S. Jackson (2008): Wine science. 3 rd edition. Elsevier Academic Press. 751 pp.		
Assessment:	a practical grade will be assigned based on a homework/essay prepared during the course		

Title	Horticultural Marketing and Quality Management		
Code			
Prerequisites			
Description			
Lecturer			
Semester		Contact hours/week	
Level		ECTS	
Teaching and Learning Methods:			
Reading:			
Assessment:			

Title	Plant Breeding and Cultivar Registration System		
Code	3GN18NAK17B		
Prerequisites	Plant Genetics		
Description	<p>Students will learn objectives (increased yield, improved quality, biotic and abiotic stress resistance etc.) and strategies of plant breeders as well as the exact definition of plant variety. Sexual and asexual reproduction biology of the main horticultural crops is also detailed. Steps of plant breeding process are shown including collection of variation (gene banks), hybridization, selection, evaluation, variety release, multiplication and distribution of the new variety. Basic techniques cover heterosis breeding, mutation breeding, backcrossing and modern methodologies encompass molecular approaches (ranging from in vitro techniques and marker-assisted selection to cis- and transgenic plants). Domestication of crop plants and history of horticultural plant breeding will be also presented. The UPOV test and the administrative procedure of variety recognition are also inherent topics of the course.</p>		
Lecturer	Dr. Attila Hegedűs, Dr. Júlia Halász, Dr. Zsuzsanna Benyóné György, Dr. Róbert Oláh		
Semester	6th, spring	Contact hours/week	4+0
Level	BSc	ECTS	3

Teaching and Learning Methods:	Learning the topics delivered in the lectures, participation in field practice
Reading:	Recommended readings: Acquaah, G. (2009). Principles of plant genetics and breeding. John Wiley & Sons.
Assessment:	oral exam

Title	Specialization II: Horticultural biotechnology and plant breeding		
Code	3GN18NBK18S		
Prerequisites	studies in plant genetics, plant physiology and plant biotechnology		
Description	Independent laboratory and field work, study of the most recent literature connected to the theses.		
Lecturer	Dr. Hegedűs Attila, Dr. Halász Júlia, Dr. György Zsuzsanna, Adrienn Kerekes		
Semester	6th, spring	Contact hours/week	0+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	Laboratory, greenhouse and/or field experiments. Presentations about the final exams topics.		
Reading:	Compulsory readings: current articles connected to the thesis Recommended readings: Nigel G. Halford: Plant biotechnology. Current and future applications of genetically modified crops. John Wiley & Son, Ltd., 2006 Chahal, Gosal: Principles and procedures of plant breeding Biotechnological and conventional approaches. Alpha Science International Ltd., Harrow, U.K., 2002		
Assessment:	term mark		

Title	Specialisation in Floriculture and Woody Plant Nursery II.		
Code	3DD02NBK90S		
Prerequisites			
Description	Primary aim of the course is to broaden the knowledge of students in their field of specialization with such topics which are not part of the general obligatory curriculum and to become familiar with the method of thesis writing.		
Lecturer	Instructors: Prof. Dr. Károly Hrotkó Assoc. Prof. Dr. Péter Honfi Assoc. Prof. Dr. Andrea Tilly-Mándy Assist. Prof. Dr. Magdolna Sütöri-Diószei Dr. Márta Gyeviki assistant lecturer Dr. István Dániel Mosonyi assistant lecturer Dr. Máté Ördögh assistant lecturer		
Semester	6th, spring	Contact hours/week	0+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	during the semester the students are required to -attend the lessons -pass the bud and evergreen plant identification test		

	-give a presentation about their thesis topic -accomplish the Literature chapter of their thesis (with 15 references at least) and Materials and Methods chapter of their thesis in writing to a deadline
Reading:	
Assessment:	fulfilling the course requirements grants a signature + grade

Title	Spezialization in vegetable growing II.		
Code	3ZT14NBK69S		
Prerequisites	Bases of vegetable production, Vegetable production systems		
Description	Detailed studies in vegetable production. Learning priority topics.		
Lecturer	Zoltán Pap PhD, Katalin Slezák PhD, Anna Szabó PhD, András Geösel PhD, Gábor Balázs PhD, Noémi Kappel PhD		
Semester	6th, spring	Contact hours/week	0+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	Attending on the lessons. Preparing minimum 10 pages of the literature review of the thesis using minimum 25 cited literature. Preparing the material and methods chapter and the experiments depending on the thesis topics.		
Reading:			
Assessment:	Marks given on the base of homework		

Title	Specialisation: Medicinal plant production module II.		
Code	3ME13NBK42S		
Prerequisites	Medicinal plant production module I.		
Description	Laboratory work with own samples/with ongoing research samples of the Department. Personal consultations on the thesis subject		
Lecturer	Krisztina Szabó, Péter Radácsi, Beáta Gosztola, Katalin Inotai, Sára Kindlovits, Szilvia Tavaszi-Sárosi		
Semester	6th, spring	Contact hours/week	0+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	Presence at the consultations, preparation of a short overview in written form of the thesis topic based on at least 10 references (journal articles)		
Reading:	Recommended readings: Issues of the journal 'Zeitschrift für Arznei- und Gewürzpflanzen', ERLING Verlag GmbH & Co. KG –available in the bibliothque of the department + any further literature provided individually		
Assessment:	1-5 notes based on the individual performance during the semester		

Title	Specialization in Fruit Growing II.		
Code	3GY15NBK49S		
Prerequisites			
Description	The establishment of the orchards is always a long-term investment and require large capital, so careful planning and comprehensive evaluation of the factors are affecting the success of production in a huge manner. At the practical course the		

	existing legislation on orchard establishment and administration which are relevant in authorizing processes will be reviewed. We evaluate complexly how the ecological, economical and market conditions affect the species and variety composition of the orchard, and the cultivation technology. We present the main steps of the orchard establishment and the major cultivation work in the non-productive orchards. In addition to lecture courses, during the field practices students can learn the tree planting and the cultivation of young orchards.		
Lecturer	David Papp, Ágnes Molnár		
Semester	6th, spring	Contact hours/week	0+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	Active participation on the lectures and field practices. Visiting or replacing the courses, according to the Study and Examination Regulations. The teacher's signature is indicating fulfillment of the interim requirements of the course, including the presentation of the references which are utilized in the Review of Related Literature chapter of the own theses.		
Reading:	Recommended readings: Jackson, D.I., Looney, N.E. 1999. Temperate and subtropical fruit production. CABI Publishers. Walling UK Tromp, J., Webster, A-D-, Wertheim, S.J. 2005. Fundamentals of temperate zone tree fruit production. Backhuys Publishers, Leiden. Westwood, M.N. 1993. Temperate-zone pomology. Timber Press. Portland, USA Ryugo, K. 1988. Fruit culture: Its science and art. Jon Wiley and Sons. New York		
Assessment:	The practical course mark will be determined by the interim tasks (presentation, written exam).		

Title	Viticulture specialisation module II		
Code	??		
Prerequisites	Dr. Borbála Bálo, Dr. Péter Bodor		
Description	This course is dealing with general aspects of organic viticulture. Within this cultivation practices such as pruning, phytotechnical treatments, harvest.		
Lecturer			
Semester	6th, spring	Contact hours/week	0+2
Level	BSc	ECTS	5
Teaching and Learning Methods:	participation on the lectures		
Reading:			
Assessment:	none		

Title	Integrated Pest Management		
	3NK06NAK03B		
Prerequisites	Applied Entomology, Plant Pathology		
Description	The environment-friendly control of pests, diseases and weeds of horticultural crops requires the understanding of the principles of integrated pest management. Building on the curriculum of the prerequisite courses, students will be acquainted		

	with the harmonized system of different control practices to maintain pests under economic threshold. Influence of plant cultural practices on control is considered, as well. Alternative control techniques (biological, agro technical and mechanical methods) are emphasized over conventional chemical control minimizing the hazards and risks to health and the environment.		
Lecturer	Dr. László Palkovics, Dr. Béla Péntzes, Dr. József Fail, Dr. Gábor Véték, Dr. Gábor Markó		
Semester	7th, fall	Contact hours/week	3+0
Level	BSc	ECTS	5
Teaching and Learning Methods:	Fulfilment of field practice, submission of an Integrated pest management plan of a horticultural crop plant		
Reading:	<p>Recommended readings: Ciancio A. and Mukerji K. G. (eds.) (2007) General concepts in integrated pest and disease management Springer, Dordrecht, The Netherlands, pp. 359. Peshin R. and Pimentel D. (eds.) (2014): Integrated pest management Vol. 4.: Experiences with implementation, global overview. Springer, Dordrecht, The Netherlands, pp. 574. Radcliffe E.B., Hutchison W.D. and Cancelado R.E. (eds.) (2008): Integrated pest management: concepts, tactics, strategies and case studies. Cambridge University Press, Cambridge, UK, pp. 529.</p>		
Assessment:	oral examination		

Title	Accounting, Finance		
Code			
Prerequisites			
Description			
Lecturer			
Semester		Contact hours/week	
Level		ECTS	
Teaching and Learning Methods:			
Reading:			
Assessment:			

Title	Farm Management and Economics		
Code			
Prerequisites			
Description			
Lecturer			
Semester		Contact hours/week	
Level		ECTS	
Teaching and Learning Methods:			

Reading:	
Assessment:	

Title	Specialization III: Horticultural Biotechnology and Plant Breeding		
Code	3MN24NBK32S		
Prerequisites	studies in plant biochemistry and physiology, plant biotechnology		
Description	Independent laboratory work, study of the most recent literature connected to the theses.		
Lecturer	Dr. István Papp, Dr. Erzsébet Kissné Bába, Dr. Anita Szegő		
Semester	7th, fall	Contact hours/week	0+4
Level	BSc	ECTS	5
Teaching and Learning Methods:	Evaluation of laboratory and/or field experiments. Presentations about the results.		
Reading:	Compulsory readings: current articles connected to the thesis		
Assessment:	term mark		

Title	Specialization in Floriculture and Woody Plant Nursery III.		
Code	3DD02NBK91S		
Prerequisites			
Description	Primary aim of the course is to broaden the knowledge of students in their field of specialization with such topics which are not part of the general obligatory curriculum and to become familiar with the method of thesis writing.		
Lecturer	Prof. Dr. Károly Hrotkó Assoc. Prof. Dr. Péter Honfi Assoc. Prof. Dr. Andrea Tilly-Mándy Assist. Prof. Dr. Magdolna Sütöri-Diószegi Dr. Márta Gyeviki assistant lecturer Dr. István Dániel Mosonyi assistant lecturer Dr. Máté Ördögh assistant lecturer		
Semester	7th, fall	Contact hours/week	0+4
Level	BSc	ECTS	5
Teaching and Learning Methods:	during the semester the students are required to -attend the lessons -pass the annual and greenhouse plant identification test -give a presentation about their thesis topic		
Reading:			
Assessment:	fulfilling the course requirements grants a signature + grade		

Title	Spezialization in vegetable growing III.		
Code	3ZT14NBK70S		
Prerequisites	Bases of vegetable production, Vegetable production systems		
Description	Detailed studies in vegetable production. Preparation for the final examination. Data analysis, Research methodology.		
Lecturer	Zoltán Pap PhD, Katalin Slezák PhD, Anna Szabó PhD, András Geösel PhD, Gábor		

	Balázs PhD, Noémi Kappel PhD		
Semester	7th, fall	Contact hours/week	0+4
Level	BSc	ECTS	5
Teaching and Learning Methods:	Attending on the lessons. Preparation and presentation of the thesis topic in minimum 8 slides of PP. Preparation and presentation on one given topic of the final examination.		
Reading:			
Assessment:	Marks given on the base of homework		

Title	Specialisation: Medicinal plant production module III.		
Code	3ME13NBK43S		
Prerequisites	Medicinal plant production module I. and module II.		
Description	Evaluation of own results/literature review. Personal consultations on the thesis subject and related issues.		
Lecturer	Krisztina Szabó, Péter Radácsi, Beáta Gosztola, Katalin Inotai, Sára Kindlovits, Szilvia Tavaszi-Sárosi, Éva Németh, Zsuzsanna Pluhár		
Semester	7th, fall	Contact hours/week	0+4
Level	BSc	ECTS	5
Teaching and Learning Methods:	Presence at the consultations, preparation of the thesis.		
Reading:	Recommended readings: Issues of the journal 'Herbalgram', American Botanical Council, US. –available in the bibliotheque of the department + any further literature provided individually		
Assessment:	1-5 notes based on the individual performance during the semester		

Title	Specialization in Fruit Growing III.		
Code	3GY15NBK50S		
Prerequisites			
Description	Within the confines of Specialization in Fruit Growing I. and II. the students learned about the economic and regulation conditionally of the production technology and the orchard establishment. The fruit growing process does not end with harvesting the fruits; the produced and harvested fruits have to be sold on the market in a package which satisfies the customer's need. Thus within the framework of the subject "Specialization of Fruit Growing III" the harvesting and postharvest processes are specially emphasized. Additionally it is important to know the experiences acquired by the students during the practical training, so the students give an account of their practical work with a presentation.		
Lecturer	Ágnes Molnár, Dávid Papp		
Semester	7th, fall	Contact hours/week	0+4
Level	BSc	ECTS	5
Teaching and Learning Methods:	Visiting the consultations, according to the Study and Examination Regulations. The teacher's signature is indicating the fulfillment of the interim requirements of the course		

Reading:	Recommended readings: Jackson, D.I., Looney, N.E. 1999. Temperate and subtropical fruit production. CABI Publishers. Walling UK Tromp, J., Webster, A-D-, Wertheim, S.J. 2005. Fundamentals of temperate zone tree fruit production. Backhuys Publishers, Leiden. Westwood, M.N. 1993. Temperate-zone pomology. Timber Press. Portland, USA Ryugo, K. 1988. Fruit culture: Its science and art. Jon Wiley and Sons. New York
Assessment:	The subject finished with a practical course mark which is determined the interim course requirements (presentation, classroom test based on the curriculum of the practical courses).

Title	Viticulture specialization module III		
Code	3SZ22NBK38S		
Prerequisites	Specialization in viticulture		
Description	The last specialization module of Viticulture deals with the breeding and propagation of grapevines. Invited speakers introduce practical and regulation aspects of grapevine propagation. Students will be prepared for thesis writing and for the final exams.		
Lecturer	György Dénes Bisztray, Tamás Deák, István Fazekas		
Semester	7th, fall	Contact hours/week	0+4
Level	BSc	ECTS	5
Teaching and Learning Methods:	attendance at the lessons, presenting the thesis topic		
Reading:	Compulsory readings: Presentation slides and handouts Recommended readings: R.S. Jackson (2008): Wine science. 3 rd edition. Elsevier Academic Press. 751 pp.		
Assessment:	a practical grade will be assigned based on the presentation of the thesis topic of the students		