International Master Horticultural Science

Corvinus University of Budapest, Faculty of Horticultural Sciences

Prerequisites for entering the course
(Hungarian students):
Students graduated as BSc may enter the course if they have achieved the following credits in the following modules:

- Natural sciences (20-34 credits),
- Natural resources basic sciences (8-20 credits),
- Agricultural sciences (20-40 credits),
- Economic sciences (14-24 credits).

For international applicants BSc in agriculture, horticulture or related sciences. The degree will be checked individually.

Characteristics of the study:
Core courses are compulsory for each students. The are offered mainly in the first 2 semesters.
Pool courses are subjects for choice achieving altogether for 24 credits according to interest and topic of dissertation.
For 6 credits the student may have any other course from this or any other MSc.
Students may choose a dissertation topic –after the first semester- connected to one of the 5 horticultural branches (fruits, vegetables, medicinal plants, ornamentals and viticulture) or connected to their interdisciplinary aspects. The dissertation is based on individual research work.
The curriculum consists of a practicum period at least 4 weeks at a farm or any other horticultural production-, processing firm, at a research institute or similar organization. It can be fulfilled at any time during the course.
The courses are finished with exams in writing or oral form. The dissertation is defended at a final exam after the 4th semester.

In case of an International Master, students have the first semester at home in Budapest, than they should fulfill at least 30 credits at some partner institution, taking courses from the common modules list. Dissertation and research work can also be carried out at a partner uni.
Corvinus Uni accept the terms of the Agreement of the former partners for a joint degree in International Master of Horticultural Sciences.

List of courses according to modules

International Master Horticultural Science

List of courses offered by Corvinus University of Budapest, Faculty of Horticultural Sciences according to modules

(E) Teaching activities delivered in English, (D) Teaching activities delivered in German.
The subjects offered in Hungarian are not mentioned here.

Breeding and Biotechnology

Teaching activities	Credits	Lecturer	Semester
Propagation biology of plants (E) Vermehrungsbiologie der Pflanzen (D)	3	K. Hrotko	1
Evaluation of fruit cultivars (E)	4	M. Toth	2
Applied biotechnology and resistance breeding (E)	3	A. Pedryc	2-4

Plant and Soil Biochemistry

Teaching activities	Credits	Lecturer	Semester
Plant allergenes and the immune system (E) Pflanzliche Allergene und das Immunsystem (D)	3	N. Lukacs	1-4
Special plant compounds in nutrition and therapy (Phytotherapy) (E)	4	J. Bernath	3
Chemical diversity of medicinal plants (E)	4	Zs. Pluhar	3

Plant Protection

Teaching activities	Credits	Lecturer	Semester
Ecological background of pest management (E)	4	V. Marko	1
Tierkunde zum Schutz der Natur (D)	3	A. Haltrich	2-3
Applied entomology (E)	5	J. Fail	2-3
Pests of vegetables and ornamentals (E)	3	B. Pénzes	3
Pests of fruits (E)	3	G. Vétek	4
Diagnostics and forecast of pathogenes (E)	4	L. Palkovics	2

Economics

Teaching activities	Credits	Lecturer	Semester
Agrarmanagement	5	J. Balint	1-3

Crop Management

Teaching activities	Credits	Lecturer	Semester
Environmental management in horticultural production (E)	3	L. Tökei	2-4
Techniques in horticultural production (E)	3	Z. Lang	1
Plant geography and ecology (E)	3	M. Höhn	1
Growth control of ornamental plants (E)	4	L. Gerzson	2
Horticultural dendrology (E) Gartenbauliche Dendrologie (D)	4	G. Schmidt	3
Cultivation of special ornamental plants (E) Spezialkulturen in der Zierpflanzenbau (D)	4	A. Mandy	4
Up-to date production technologies of fruits (E)	4	J. Papp	4
Cultivation of special medicinal plants and spices (E) Spezialkulturen in Heil- und Gewürzpflanzenanbau (D)	4	K. Szabo E. Nemeth	4
Quality oriented viticulture, production-development (E)	4	G. Zanathy	3
Modern mushroom growing (E)	4	J. Györfi	3
Saatgutherstellung und Vermehrung im Gemüsebau (D)	4	H. Nemethy	4

Crop Ecophysiology

Teaching activities	Credits	Lecturer	Semester
Plant stress physiology (E)	5	N. Lukacs	1-3
Fruit and seed physiology (E)	3	I. Papp	3-4

Complementary activities

Teaching activities	Credits	Lecturer	Semester
Research activity for the thesis	8-10		2-4
Practicum: possibility at the reseach station	Depends on time		2-4

Mathematics, Statistics, and Information Technologies

Teaching activities	Credits	Lecturer	Semester
Methods of experimental design and evaluation (E) Methode der Experiment-planung und Bewertung (D)	3	M. Ladanyi	2-4
Information systems in horticulture (E)	3	K. Szenteleki	1
Decision making methods in consultation (E)	3	Zs. Harnos	3

Title	Plant geography and plant ecology
Teaching method	Lecture, laboratory, excursion
Code	
Language	English
Syllabus content	Floristic plant geography, genecentres, vegetation of Earth, coenology, Connection of environment and tolerance, biotic and abiotic factors, natural and artificial ecological systems, diversity and stability. Indicators. Succession types. Utilisation of monitoring. Invasive plant species, weeds.
Prerequisites	Basic knowledge in botany, systematics and agro-meteorology.
Assessment mode	
Subject type classification (Course)	MSc Horticulture -Core
Hours per week	3
ECTS Credits	3
Semester	1
Module leader,other staff	Dr. Maria Höhn
Reading references	Ellenberg, H.: Vegetation ecology of Central Europe, Cambridge University Press, Cambridge, 1988. Grime, J. P. – Hodgson, G. – Hunt J. R.: Comparative plant Ecology. A Functional Approach to Common British Species, Unwin Hyman, London, 1989. Ricklefs, R. E. – Miller, G. L.: Ecology, 4th ed. Freeman, New York, 2000. Schubert, R.: Lehrbuch der Ökologie. 3. Aufl. Gustav Fischer, Jena, 1991.

Title	Information systems in horticulture
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	Data processing, Entity-Relationship model, modeling technics, construction of data processing systems, life cycles, significance and types of SQL. Relation data bases, objects, Join, connection of QBE SQL. Utilisation and planning in horticultural practice.
Prerequisites	Basic knowlegde (BSc) in mathematics, technics and computertechnics.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Core
Hours per week	3
ECTS Credits	3
Semester	1
Module leader	Dr. Karoly Szenteleki
Reading references	

Title	Propagation biology of plants Vermehrungsbiologie der Pflanzen
Teaching method	Lecture, laboratory
Code	
Language	English, German
Syllabus content	Reproduction and propagation, their role in horticulture. Significance of sexual reproduction. Blossoming and fertilization, seed biology, germination. Biological characteristics in seed production of woody plants. Secondary development of organs. Seecondary roots. Processes in graft growth, relationship and role of graft partners. Physiological aspects.
Prerequisites	Basic knowlegde (BSc) in plant anatomy, morphology, systematics, biochemistry, physiology.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Core
Hours per week	3
ECTS Credits	3
Semester	1
Module leader	Prof. Dr. Karoly Hrotko
Reading references	Bärtels, A. Gehölzvermehrung. Eugen Ulmer Verl., Stuttgart. 1996. Benech-Arnold, R. L. and Sánchez, R. A. Handbook of Seed Physiology. Haworth Press. 2004. Hartmann, H.T., Kester, D.E., Davies, F.T. és Geneve, R.L. Plant propagation. Prentice-Hall, Inc. 2002. Jackson, M.B. New root formation in plants and cuttings. Martinus Nijhoff Publishers. 1986. Krüssmann, G.. Die Baumschule. Auflage Ulmer, Stuttgart. 1996 Sedgley, M. and Griffin, A.R. Sexual reproduction of tree crops. Academic Press Limited, London. 1989.

Title	Growth control of ornamental plants
Teaching method	Lecture, laboratory, excursion
Code	
Language	English
Syllabus content	Up-to date equipments, media, nutrients. Plant factories in seedling raising and production of balcony plants. Pot-plants in the XXI. Century. Varieties. Specialities of cut flowers and greens. Timing in flowering. Growth regulators and their biological effects. Post harvest and marketing of flowers.
Prerequisites	Basic knowlegde (BSc) in botany, physiology, plant production and propagation.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Core
Hours per week	3
ECTS Credits	3
Semester	2
Module leader	Dr. Laszlo Gerzson
Reading references	Armitage, A.M.: Specialty Cut Flowers. Varsity Press/Timber Press Portland, Oregon 1993. Beytes, C. (ed.): Ball Redbook I. Greenhouses and Equipment. Ball Publishing Batavia, Illionis, USA 2003. De Hertogh, A.: Holland Bulb Forcer's Guide. Alkemade Printing BV, The Netherlands 1996.. Reed, D. Wm. (ed.): Water, Media, and Nutrition for Greenhouse Crops. Ball Publishing Batavia, Illionis, USA 1996

Title	Evaluation of fruit cultivars
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	Consideration in utilisation of varieties. Evaluation of cultivars: methods, results. Consumers' point of view. Evaluation of resistance. Identification by molecular screening. Blossoming and fertilization specialities of fruits. Traditional and new cultivars. Metaxenia.
Prerequisites	Basic knowlegde (BSc) in botany,prodion, plant propagation, physiology, genetics and breeding.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Core
Hours per week	3
ECTS Credits	4
Semester	2
Module leader	Prof. Dr. Magdolna Toth
Reading references	Tóth, M. (ed.) Progress in Apple Breeding and Evaluation of Gene Resources. Special number of International Journal of Horticultural Science.. ISSN 1585-0404. 2005. Tromp, J. (ed.) Fundamentals of Temperate Zone Tree Fruit Production. Backhuys Publishers, Leiden. 2005. Morgan, J., Richards, A. The new Book of Apples. Ebury Press, London. 1993. Götz, G. & R. Silbereisen. Obstsorten Atlas. Ulmer, Stuttgart. 1989.

Title	Chemical diversity of medicinal plants
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	Systematics of active materials. Their biosynthesis and catabolism. Possibilities of regulation. Research tendencies, new results. Cemical diversity. Chemotaxonomy. Methods in analytics of medicinal plant drugs.
Prerequisites	Basic knowlegde (BSc) in organic- and biochemisty, plant taxonomy and botany.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Core
Hours per week	3
ECTS Credits	4
Semester	3
Module leader	Dr. Zsuzsanna Pluhar
Reading references	W. C. Evans: Trease and Evans' Pharmacognosy. WB Saunders Company Ltd., London, 1996 Wagner, H.-Blatt, S.: Plant Drug Analysis. Springer, Berlin, 1996. Tétényi P. Infraspecific chemical taxa of medicinal plants. Akadémiai Kiadó, Budapest, 1970.

Title	Technics in horticultural production;
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	Machines and special equipments in horticultural production with special emphasis on propagation, plant protection, harvest and primary processing. Main parameters influencing eefficiency and its theoretical backgrounds. Optimalisation of technology. Biological, economical aspects. Directions of development.
Prerequisites	Basic knowlegde (BSc) in mathematics, physics, technics and cultivation.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Core
Hours per week	3
ECTS Credits	3
Semester	1
Module leader	Prof. Dr. Zoltán Lang
Reading references	CIGR (2004): Handbook of Agricultural Engineering – Volume III. Plant Production Engineering. Published by ASAE (American Society of Agricultural Engineers) Witney, B.: Choosing and using Farm Machines. Land Technology Ltd., Edinburgh, Scotland, 1996.

Title	Decision making methods in consultation
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	Information systems in horticultural production and consultation. Planning, programming. Sheduling of production. Risk assessment in practice.
Prerequisites	Basic knowlegde (BSc) in mathematics, computer technics, informatics and cultivation.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Core
Hours per week	2
ECTS Credits	3
Semester	3
Module leader	Prof. Dr. Zsolt Harnos
Reading references	

Title	Horticultural dendrology Gartenbauliche Dendrologie
Teaching method	Lecture, laboratory, excursion
Code	
Language	English, German
Syllabus content	Plant assotiations of woody plants. Choosing the species. Planting of trees in settlements, planting in extreme areas. Maintenance, care of old trees. Evergreens and deciduous trees. Shrubs. Marketing.
Prerequisites	Basic knowlegde (BSc) in botany, agrometeorology, plant production, propagation.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	3
ECTS Credits	4
Semester	3
Module leader	Prof. Dr. Gabor Schmidt
Reading references	Bärtels, A. : Das große Buch der Ziergehölze. Verlag Eugen Ulmer, Stuttgart, Németország, 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, Ilinois, USA., 1990. Rehder, A.: Manual of Cultivated Trees and Shrubs Hardy in North Amerika. Dioscorides Press, Portland, Oregon, USA, 1990.

Title	Cultivation of special ornamental plants, Spezialkulturen in der Zierpflanzenbau
Teaching method	Lecture, laboratory, excursion
Code	
Language	English, German
Syllabus content	Orchids, bromelias, cactus and succulent species. Their role in decoration. Cut greens, utilization. Cultivation of bonsai. Bulbous plants. Ornamental plants in water.
Prerequisites	Basic knowlegde (BSc) in botany, plant production, propagation, physiology.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	3
ECTS Credits	4
Semester	4
Module leader	Dr. Andrea Mandy
Reading references	Armitage, A.M.: Specialty Cut Flowers. Varsity Press/Timber Press Portland, Oregon 1993. Beytes, Ch. (ed.): Baal Redbook I. Greenhouses and Equipment, II. Crop Production. Ball Publishing, Batavia, ILlionis, USA, 2003 Bryan, J.E.: Bulbs I., II. Timber Press, Portland, Oregon 1989. Goede, B.: Orchideen. Der Praxis Ratgeber. BLV Verlagsgesellschaft mbH, München 2003.

Title	Up-to date production technologies of fruits
Teaching method	Lecture, laboratory, excursion
Code	
Language	English
Syllabus content	Development in cultivation technologies, integrated and ecological production. Competitivness in fruit production. Planning and establishment of plantations. Novelties in technologies.of apple, stone-fruits and berries. Garden scale cultivation. Specialities of EU countries. Post-harvest, storage.
Prerequisites	Basic knowlegde (BSc) in fruit science, technics, plant protection, and marketing.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	3
ECTS Credits	4
Semester	4
Module leader	Prof. Dr. János Papp
Reading references	Childers N.: Modern Fruit Science, Horticultural Publication, Gainesville, 1996.

Title	Special plant compounds in nutrition and therapy
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	Secondary compounds in plants. Their biological activity. Safety requirements, toxicity, side effecty, interactions. Quality documentation, quality aspects. Food additives, dietary supplements. Traditional medicinal products (according to EU). Natural dyes. Reform nutrition.
Prerequisites	Basic knowlegde (BSc) in biochemistry, medicinal plants.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	3
ECTS Credits	4
Semester	3
Module leader	Prof. Dr. Jenő Bernáth
Reading references	Gaedcke, F., Steinhoff, B. és Blasius, H. Herbal medicinal Products. Medpharm Scientific Publishers, CRC Press, USA, pp. 177. 2000. Mills, S. és Bone,K. The essential guide to herbal safety. Elseviesr, USA. pp. 684. 2005. Schilcher, H., Kammerer,S. Leitfaden phytotherapie. Urban amd Fischer Verlag, München-Jena, pp. 966. 2000.

Title	Cultivation of special medicinal plants and spices; Spezialkulturen in Heil- und Gewürzpflanzenanbau
Teaching method	Lecture, laboratory, excursion
Code	
Language	English, German
Syllabus content	Biological, botanical, ecological relationships in medicinal plant production. Otimalisation of cultivation, model systems. Quality aspects, Economical aspects. Tendencies and new species on the market.
Prerequisites	Basic knowlegde (BSc) in botany, plant production, propagation, medicinal plants, plant ecology.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	3
ECTS Credits	4
Semester	4
Module leader	Dr. Krisztina Szabó, Prof. Dr. Eva Németh
Reading references	Dachler, M.-Pelzmann, H.: Arznei- und Gewürzpflanzen (Anbau-Ernte-Aufbereitung), Öster.Agrarverlag, Klosterneuburg 1999 Medicinal and Aromatic Plants – Industrial Profiles selected volumes. Harwood Academic Publishers, Asterdam, the Netherlands, 1998-2006 Zeitschrift der Arznei- und Gewürzpflanzen, Hippokrates Verlag, Stuttgart, Volumes 1996-

Title	Quality oriented viticulture, production-development
Teaching method	Lecture, laboratory, excursion
Code	
Language	English
Syllabus content	Comprehensive presentation of viticulture and oenology, assessment, determination of future focus. Legal aspects. Databases. Quality assurance. International aspects.
Prerequisites	
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	3
ECTS Credits	4
Semester	3
Module leader	Dr. Gabor Zanathy
Reading references	American Journal of Enology and Viticulture (publ. American Society for Enology and Viticulture, HighWire Press) Coombe, B. and Dry, P. (eds.). Viticulture Volume II. Practices. Winetitles. Adelaide, Australia. 2002

Title	Modern Mushroom Growing
Teaching method	Lecture, laboratory, excursion
Code	
Language	English
Syllabus content	Mushroom consumption and tendencies. Cultivated fungi: biological requirements, production technologies. Exotic fungi. Nutritional, terapeutical, economical value. Special postharvest methods, preservation and marketing.
Prerequisites	Basic knowlegde (BSc) in botany, plant ecology, vegetables, and economy.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	3
ECTS Credits	4
Semester	3
Module leader	Dr. Julia Györfi
Reading references	Chang, Shu-ting- Miles, P. G.. Mushromms, The Chinese University Press. Hong Kong 2003. Oei, P.: Mushroom cultivation. 3rd Backhuys Publishers. Leiden. Hollandia, 2003. Stamets, P.: Growing Gourmet and Medicinal Mushrooms, Ten Speed Press, 2001 Periodicals:: The Mushroom Journal, The Mushroom News; Der Champignon;

Title	Saatgutherstellung und Vermehrung in der Gemüsebau
Teaching method	Lecture, laboratory, excursion
Code	
Language	German
Syllabus content	Ecological requirements. Traditional and up-to date technics. Legal aspects. Genetical bases. Hybrid cultivars. Biological and physical characteristics of seeds, processing. Case studies for most important vegetable species.
Prerequisites	Basic knowlegde (BSc) in botany, vegetable study, plant production, propagation, physiology, technics and nutrition.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	3
ECTS Credits	4
Semester	4
Module leader	Dr. Hanna Nemethy
Reading references	Basra, A.S.: Handbook of Seed Science and Technology, The Haworth Press Inc., New York, London, Oxford, 2001 George, R.A.T.: Vegetable Seed Production. CABI Publ. New York, 1999. Splittstoesser, W. E.: Vegetable Growing Handbook. Organic and Traditional Methods. AVI Publ. New York. 1990.

Title	Methods of experimental design and evaluation; Methode der Experiment-planung und Bewertung
Teaching method	Laboratory
Code	
Language	English, German
Syllabus content	Statistics, sampling, data processing, calculation of error, hypothesis, distribution fitting, deviation and expected values, experimental design, ANOVA models, graphical presentation, regression models
Prerequisites	Basic knowlegde (BSc) in mathematics, computer technics.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	2
ECTS Credits	3
Semester	2-4
Module leader	Dr. Marta Ladanyi
Reading references	Palaniswamy, U. (2004): Handbook of Statistics for Teaching and Research in Plant and Crop Science The Haworth Press Inc., New York, London, Oxford

Title	Environmental management in horticultural production
Teaching method	Lecture, excursion
Code	
Language	English
Syllabus content	Environmental factors, grouping, levels. Air pollution, protection. Wind erosion. Water pollution. Water reserves. Soils, pollution, degradation, prevention, improvement. Secondary salt accumulation, prevention, improvement. Emission, immission, transmission, calculations, evaluations in air, water, soil. Bioogical diversity, measurement. Eco-toxicology. Előfeltételek: BSc szintű talajtani, agrokémiai, geológiai, meteorológiai, éghajlati, vízgazdálkodási, természetvédelmi és matematikai alapismeretek.
Prerequisites	Basic knowlegde (BSc) in soil science, agrochemistry, meteorology, nature protection, mathematics.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	2
ECTS Credits	3
Semester	2-4
Module leader	Dr. Laszlo Tökei
Reading references	

Title	Applied biotechnology and resistance breeding
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	New ways of resistance breeding, plant protection. The plant-cell---plant system, production of haploid and homozygotic diploid plants. Protoplast fusion, tests in *in vitro* cultures. Utilisation of recombinant DNS technics. Up to date results.
Prerequisites	Basic knowlegde (BSc) in genetics, breeding, botany, chemistry, plant physiology and pathology.
Assessment mode	
Subject type classification (Course)	MSc Horticulture- Pool
Hours per week	2
ECTS Credits	3
Semester	2-4
Module leader, other staff	Dr. Andrzej Pedryc
Reading references	

Title	Plant stress physiology
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	Stress, stressors. Molecular mechanisms, biochemical and physiological mechanisms, development of resistance. Oxidative stress, protection potential of the plant.
Prerequisites	Basic knowlegde (BSc) in lant anatoma, morphology, soil science, agrometeorology, plant medicine, physiology and biochemistry.
Assessment mode	
Subject type classification (Course)	Horticultural Ingenieur - Pool
Hours per week	2
ECTS Credits	5
Semester	1-3
Module leader	Dr. Magdolna Droppa, Prof. Dr. Noemi Lukacs
Reading references	Taiz, L. - Zeiger, E.: Plant Physiology, Sinauer Associates, Inc., Sunderland, Massachusetts (2002)

Title	Plant allergens and the immune system Pflanzliche Allergene und das Immunsystem
Teaching method	Lecture, laboratory
Code	
Language	English, German
Syllabus content	Basic immunology (innate and adaptive immunity, humoral and cellular immune response, diversity of immune receptors, interaction between the components of immune system), hypersensitivity, immediate hypersensitivity – allergic reaction, plant allergens, immunotherapy of allergic diseases.
Prerequisites	Basic knowlegde (BSc) in plant anatomy, physiology, biochemistry.
Assessment mode	
Subject type classification (Course)	Horticultural Ingenieur - Pool
Hours per week	2
ECTS Credits	3
Semester	1-4
Module leader, other staff	Prof. Dr. Noemi Lukacs
Reading references	A.K. Abbas – A.H. Lichtman: Cellular and Molecular Immunology (2000), Saunders, Philadelphia

Title	Fruit and seed physiology
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	Physiological processes underlying flowering, fruit set, seed and fruit maturation and ripening, as well as postharvest biology. Students will learn how science addresses biological and economic issues concerning human use of these natural resources. Understanding these topics enables students to see the connections between biological systems, their agronomical use and the food consumed as part of our everyday lives.
Prerequisites	BSc knowledge in botany, biochemistry, and plant physiology.
Assessment mode	
Subject type classification (Course)	MSc Horticulture -Pool
Hours per week	2
ECTS Credits	3
Semester	3-4
Module leader, other staff	Dr. Istvan Papp
Reading references	

Title	Ecological background of pest management
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	Ecosystems, connection of abiotic and biotic factors. Development, maintenance and regulation of human ecosystems. Case studies on connections of plant species, cultivar, production method, pests and ecological factors. Optimalisation.
Prerequisites	Basic knowlegde (BSc) in plant ecology, plant production, plant medicine and physiology.
Assessment mode	
Subject type classification (Course)	MSc Plant Medicine - Core
Hours per week	3
ECTS Credits	4
Semester	1
Module leader	Dr. Viktor Marko
Reading references	Begon, M., Harper, J. L. and Townsend, C. (2005): Ecology; From Individuals to Ecosystems. Balckwell, Vandermeer, J.H. and Goldberg, D.E. (2004): Population Ecology-First principles, Princeton University Press, Princeton and Oxford,

Title	Tierkunde zum Schutz der Natur
Teaching method	Lecture, laboratory, excursion
Code	
Language	German
Syllabus content	Nature protection. History. Legal aspects in Hungary and in EU. Animal taxa, protected species with special respect on birds (carnivores), bats. Role of highways and roads. Migration of birds. Synanthrop taxa, urbanization. Endangered species, backgrounds, protection.
Prerequisites	Basic knowlegde (BSc) in botany, plant production, entomology, plant medicine.
Assessment mode	
Subject type classification (Course)	MSc Plant Medicine -
Hours per week	2
ECTS Credits	3
Semester	2-3
Module leader	Dr. Attila Haltrich
Reading references	

Title	Applied entomology
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	The basics of entomology are taught and revised in this course including the following range of subject: morphology, taxonomy, ecology, population dynamics and zoogeography. This contributes to the better knowledge of horticultural pests and helps gathering all possible ways of protection against them. Different types of damage caused by pests and several methods of controlling their population are presented as well as the aspects of host-pest -natural enemy relation complex.
Prerequisites	Basic knowlegde (BSc) in plant production and primarly processing.
Assessment mode	
Subject type classification (Course)	Horticultural Engineur- Pool
Hours per week	3
ECTS Credits	5
Semester	2-3
Module leader	Dr. Jozsef Fail
Reading references	

Title	Pests of vegetables and ornamentals
Teaching method	Lecture, laboratory, excursion
Code	
Language	English
Syllabus content	Presentation of fauna of the plantations. Influencing factors, production methods. Special pests of paprika, tomato, cucumber, onion, cabbages, melone, bean, pea, salads, root vegetables, etc. Agrotechnical, biological, chemical methods of protection both in open field and in greenhouses or other equipments.. Nature protection possibilities.
Prerequisites	Basic knowlegde (BSc) in vegetable and ornamental production, propagation.
Assessment mode	
Subject type classification (Course)	MSc Plant Medicine - Pool
Hours per week	2
ECTS Credits	3
Semester	3
Module leader	Dr. Béla Pénzes
Reading references	Alford D.V.: Pests of Ornamental Trees, Shrubs and Flowers. Manson Publishig, London (1995)

Title	Pests of fruits
Teaching method	Lecture, laboratory, excursion
Code	
Language	English
Syllabus content	Pests in fruit and grapewine plantations. Connection with plant phenology. Production technics, and their effect. Presentation of most significant species in horticultural production and nurseries. Pest management.
Prerequisites	Basic knowlegde (BSc) in horticultural plant production, taxonomy, plant medicine, agrochemistry.
Assessment mode	
Subject type classification (Course)	MSc Plant Medicine - Pool
Hours per week	2
ECTS Credits	3
Semester	4
Module leader	Gábor Vétek
Reading references	Alford, D.V.: A colour atlas of fruit pests their recognation, biology and control. Wolfe Publishing Ltd., London (1992)

Title	Diagnosis and forcast of pathogenes
Teaching method	Lecture, laboratory
Code	
Language	English
Syllabus content	Sampling, transport, preparation, aspects of examinations and decision making. Makroscopics, isolation methods of pathogens, evaluation of morphological traits, biocmecal assays. Diagnostics, microscopic methods. Molecular biological screening, protein and nucleic acid analysis, theory and practice. Methods and equipments of forecast, possibilities and limits.
Prerequisites	Basic knowlegde (BSc) in botany, plant physiology, pathology, biochemistry, genetics.
Assessment mode	
Subject type classification (Course)	MSc Plant Medicine - Core
Hours per week	4
ECTS Credits	4
Semester	2
Module leader	Dr. László Palkovics
Reading references	Agrios GN (szerk.): Plant Pathology (4th ed.), Academic Press, San Diego California, 1997. Hull R (ed.): Matthews' Plant Virlogy. Academic Press, London 2002. Sambrook, J., Fritsch, E. F., and Maniatis, T. 1989. Molecular Cloning: a Laboratory Manual, 2nd edn. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, U.S.A. Bartlett JMS. – Stirling D. (eds.): PCR Protocols. Humana Press, Totowa, New Jersey. 2003.