



**SZENT ISTVÁN  
UNIVERSITY**

BUDAPEST



**FACULTY OF HORTICULTURAL SCIENCE**

## List of courses ERASMUS Faculty of Horticultural Science 2020/2021

| Title of the course   | Code        | Credit | Semester | Bachelor | Master | Doctoral | Schedule   |
|---|-------------|--------|----------|----------|--------|----------|--|
| Agrar-Economy of the European Union                                   | INTKT MM001 | 5      | Spring   | N        | Y      | N        | Wednesday<br>14-18   |
| Agrarian Law and Law in Economic Life                                 | 3MM11NAK29M | 3      | Spring   | N        | Y      | N        | Tuesday<br>16-18.45<br>seminar room                        |
| Agromanagement  | 3MM11NAK01M | 3      | Spring   | N        | Y      | N        | Monday<br>10-12  |
| Applied Entomology  | 3RT07NAK01B | 3      | Spring   | Y        | Y      | N        | Monday<br>14- 17.45  |
| Biological and Fitotechnical Resources of Viticulutre                 | 3SZ22NAK12M | 3      | Fall     | Y        | Y      | N        | Wednesday<br>12-14 + 17-<br>18                             |
| Biological Bases of Entomology,                                       | 3RT07NAK04M | 3      | Fall     | Y        | Y      | Y        | Monday<br>11:00-<br>13:45                                  |
| Biological bases of plant pathology                                   | 3NK06NAK03M | 4      | Fall     | Y        | Y      | Y        | Wednesday<br>9-13  |
| Biologically active substances in horticultural species               | 3ME13NAK56M | 3      | Fall     | N        | Y      | Y        | Lecture:<br>Wednesday<br>14-15.45<br>Practice:<br>16-16.45 |
| Biology and Cultivation of Fungi                                      | 3ZT14NAK41M | 3      | Spring   | Y        | Y      | Y        | Wednesday<br>10-12   |
| Biometrics  | 3MI09NAK08B | 4      | Spring   | Y        | Y      | N        | Schedule at<br>the<br>beginning of<br>the semester         |
| Business strategy planning in rural areas                             | INTKT MM002 | 5      | Fall     | N        | Y      | N        | Thursday<br>10-14  |
| Cultivation and Processing of Medicinal Plants (Basic Level)          | INTKT ME002 | 5      | Spring   | Y        | Y      | N        | Lecture:<br>Friday<br>10-11.45                             |
| Cultivation of Special Medicinal Plants and Spices ('advanced level') | 3ME13NBV23M | 3      | Spring   | N        | Y      | N        | Lecture:<br>Thursday<br>14-15.45<br>Practice:              |

|  |             |   |             |   |   |   |   |
|--|-------------|---|-------------|---|---|---|---|
|  |             |   |             |   |   |   | 16-16.45  |
| Cultivation of Greenhouse Ornamentals                    | 3DD02NAK02B | 4 | Fall        | Y | Y | N | Lectures: Wednesday 12-13.45; Practice: Thursday 12-13.45 |
| Evaluation of Fruit Cultivars                            | 3GY15NAK19M | 3 | Spring      | N | Y | N | Friday 11-13:45   |
| Experimental Design and Evaluation                       | 3MI09NCS05M | 2 | Fall        | Y | Y | N | Schedule at the beginning of the semester                 |
| Flowering, Fruit and Seed Physiology                     | 3MN24NCV03B | 2 | Spring      | Y | Y | N | Special schedule in blocks                                |
| Forcing in Soilless Systems                              | 3ZT14NAK40M | 3 | Fall        | N | Y | Y | Thursday 14-16  |
| Genetics and Plant Breeding                              | 3GN18NAK01B | 4 | Fall+Spring | Y | Y | N | Schedule at the beginning of the semester                 |
| Plant geography and plant ecology                        | 3NT20NAK08M | 3 | Fall        | N | Y | N | Monday 12-14  |
| Growing of Nut Fruit Species                             | INTKT GY004 | 5 | Fall        | Y | Y | N | Schedule at the beginning of the semester                 |
| Horticultural Dendrology                                 | 3DD02NBV27M | 3 | Fall        | N | Y | N | Wednesday 14-15.45  |
| Horticultural Information Systems                        | 3MI09NAK13M | 3 | Fall        | N | Y | N | Schedule at the beginning of the semester                 |
| Horticultural Marketing and Quality Management           | 3MM11NAK07B | 4 | Fall+Spring | Y | Y | N | Schedule at the beginning of the semester                 |
| Integrated Pest Management                               | 3NK06NAK03B | 7 | Fall        | Y | N | N | Schedule at the beginning of the semester                 |
| Modern Systems in Production and Commerce of Ornamentals | 3DD02NAK64M | 3 | Spring      | Y | Y | N | Tuesday 12-14.45  |
| Molecular Genetics and Gene Technology of Plants         | 3GN18NAK06M | 3 | Fall+Spring | N | Y | Y | Schedule at the beginning of the semester                 |
| Molecular markers  | 3GN18NCS30B | 2 | Spring      | Y | Y | Y | Schedule at the   |

|   |             |   |             |   |   |   |  |
|---|-------------|---|-------------|---|---|---|--|
|   |             |   |             |   |   |   | beginning of the semester  |
| Multivariate Statistical Methods                          | 3MI09NVC13P | 6 | Fall        | N | N | Y | Schedule at the beginning of the semester                              |
| Natural Resources and Nature Protection                   | 3KT23NAK11M | 3 | Spring      | Y | Y | N | Wednesday 9-11   |
| Non chemical weed mangagement                             | 3OG55NCS73B | 2 | Fall+Spring | Y | Y | N | Fall semester: Tuesday 10-11:30<br>Spring semester: Wednesday 12-13:30 |
| Organic Farming   | 3OG55NAK06B | 3 | Fall+Spring | Y | Y | N | Fall semester: Thursday 9-11:45<br>Spring semester: Thursday 8-10:45   |
| Organic Seed Production                                   | 3OG55NAK80M | 3 | Fall+Spring | Y | Y | Y | Thursday 10:13.45  |
| Outdoor Cultivation of Ornamental Plants                  | 3DD02NAK01B | 4 | Spring      | Y | Y | N | Lectures: Monday 8-9.45;<br>Practice: Thursday 8-9.45                  |
| Permaculture and other trends of organic farming          | 3OG55NCS74B | 2 | Fall+Spring | Y | Y | N | Schedule at the beginning of the semester                              |
| Physiology of Temperate Zone Fruit Plants                 | 3GY15NBV25M | 3 | Spring      | N | Y | N | Schedule at the beginning of the semester                              |
| Plant Physiology and Stress Biology                       | 3MN24NAK38M | 3 | Fall        | Y | Y | N | Thursday 13-16.00  |
| Plant Pathology   | 3NK06NAK20B | 5 | Fall        | Y | N | N | Wednesday 8:00-12:00   |
| Plant Virology  | INTKT NK001 | 5 | Spring      | Y | Y | N | Monday 9-13  |
| Post Harvest Physiology and Technologies of Fruit Species | INTKT GY002 | 5 | Spring      | N | Y | N | Schedule at the beginning of the semester                              |
| Practical Ampelography                                    | 3SZ22NCS64B | 2 | Spring      | Y | Y | N | Schedule at the beginning of the semester                              |

|  |             |   |             |   |   |   |   |
|--|-------------|---|-------------|---|---|---|---|
| Principles of Vegetable Production                                   | 3ZT14NAK02B | 4 | Spring      | Y | Y | N | Monday 10-14  |
| Principles of Wine Technology  | ETBT901 C   | 4 | Fall        | Y | Y | N | Tuesday 14-16                                       |
| Production Ecosystems and Forms of Their Regulation                  | 3ME13NAK08M | 3 | Fall        | Y | Y | Y | Lecture: Monday 8-9.45<br>Practice: 10-10.45        |
| Production of Propagation Material of Vegetables                     | 3ZT14NBV43M | 3 | Spring      | N | Y | N | Tuesday 8-10  |
| Propagation Biology of Plants  | 3DD02NAK10M | 3 | Spring      | N | Y | N | Wednesday 13-15.45                                  |
| Quality Oriented Viticulture Production-development                  | 3SZ22NBV18M | 3 | Spring      | Y | Y | N | Lecture: Monday 8-9.45<br>Practice: Monday 10-10.45 |
| Renewable energy sources   | 3MT17NCS42B | 2 | Spring      | Y | Y | N | Wednesday 12-13.45                                  |
| Soil Ecology   | 3KT23NAK30M | 3 | Fall+Spring | Y | Y | N | Monday 8-11   |
| Soil Science for Ornamentalists                                      | 3KT23NAK18M | 3 | Fall+Spring | Y | Y | Y | Wednesday 10-12                                     |
| Special Technical Knowledge  | 3MT17NAK18M | 3 | Fall        | N | Y | N | Tuesday 11-13.45                                    |
| Statistical methods of decision support systems in extension service | 3MI09NAK43M | 3 | Spring      | N | Y | N | Schedule at the beginning of the semester           |
| Sustainable Crop Production  | 3OG55NAK81M | 4 | Spring      | Y | Y | Y | Lecture: Tuesday 10-11.45<br>Practice: 12-13.45     |
| Up-to-date Methods in Fruit Growing                                  | 3GY15NBV26M | 3 | Spring      | Y | Y | N | Schedule at the beginning of the semester           |
| Up-to-date Technologies of Medicinal Plant Production                | 3ME13NAK37M | 3 | Fall        | Y | Y | Y | Lecture: Tuesday 8-9.45<br>Practice: 10-10.45       |
| Vegetable Production Technologies                                    | 3ZT14NAK04B | 4 | Fall        | Y | Y | N | Tuesday 10-14                                       |
| Wine Terroirs  | INTKT SZ002 | 5 | Fall+Spring | Y | Y | N | Thursday 12-13.45                                   |
| Woody Plant Nursery  | 3GY15NAK03B | 4 | Fall        | Y | Y | N | Lectures: Tuesday                                   |

|  |  |  |  |  |  |  |   |
|--|--|--|--|--|--|--|---|
|  |  |  |  |  |  |  | 14-15.45<br>Practice:<br>Thursday<br>8-11.45<br>(four times in<br>a semester) |
|--|--|--|--|--|--|--|---|

## COURSE DESCRIPTIONS

|                                       |  |                           |   |
|---------------------------------------|--|---------------------------|---|
| <b>Title</b>                          | Agrar-Economy of the European Union  |                           |   |
| <b>Code</b>                           | INTKT MM001  |                           |   |
| <b>Prerequisites</b>                  |  |                           |   |
| <b>Description</b>                    | <p>Introduces the main agricultural sectors, current production and legal trends, the situation of Hungary on the common agricultural market. Description of significant sectors in terms of export-import, competitors, farm agreements. Discussion over the market possibilities and problems of the Hungarian agriculture concerning various production sectors.</p> <p>The students fulfilling the course requirements will be able to</p> <ul style="list-style-type: none"> <li>-understand the operations of various producing sectors,</li> <li>-overview the world market and European market of examined products</li> <li>- understand the differences of various production methods</li> </ul> |                           |   |
| <b>Lecturer</b>                       | Márton Kocsis  |                           |   |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 4 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 5 |
| <b>Teaching and Learning Methods:</b> |  |                           |   |
| <b>Reading:</b>                       | <p>Compulsory readings:<br/>Website of the European Commission: Agriculture and Rural Development</p> <p>Recommended readings:<br/>Website of Eurofruit/Fruitnet - <a href="http://www.fruitnet.com/eurofruit">http://www.fruitnet.com/eurofruit</a></p>   |                           |   |
| <b>Assessment:</b>                    | Written and oral exam  |                           |   |

|                                       |  |                           |   |
|---------------------------------------|--|---------------------------|---|
| <b>Title</b>                          | Agrarian Law and Law in Economic Life  |                           |   |
| <b>Code</b>                           | 3MM11NAK29M  |                           |   |
| <b>Prerequisites</b>                  |  |                           |   |
| <b>Description</b>                    | <p>The aim of the course is to introduce the legal system, legal provisions and other standards, basic terminology and most important regulations (with special respect to administrative law, civil and labour code) and the sectoral regulation of agriculture, and more precisely, horticulture. Another important aspect of the course is to introduce a practical approach to the application of legal provisions, and the overview of judicial practice related to economy and horticultural sector.</p> |                           |   |
| <b>Lecturer</b>                       | Zoltán Kator   |                           |   |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 4 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 3 |
| <b>Teaching and Learning Methods:</b> |  |                           |   |
| <b>Reading:</b>                       | <p>Compulsory readings:<br/>- Legal framework of CAP</p>   |                           |   |
| <b>Assessment:</b>                    |  |                           |   |

|                      |  |  |  |
|----------------------|--|--|--|
| <b>Title</b>         | Agromanagement   |  |  |
| <b>Code</b>          | 3MM11NAK01M  |  |  |
| <b>Prerequisites</b> | Intermediate level of English language skills,basic horticulture and economics knowledge   |  |  |
| <b>Description</b>   | <p>The subject is supposed to introduce the significant tendencies and participants, economic and social aspects of agro-business, but above all of horticulture sector. It is also about the detailed description of local and global circumstance of</p> |  |  |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
|                                       | horticultural enterprises, specially focused on the analysis of their competitiveness. According to our priorities we also tend to practice the English technical terms, related expressions of the discipline and English agro-business technical language in general. The course covers the fields characterized by the key words such as follows; farm management, product management, product designations, agricultural land classification, product classification, sector analysis, market analysis, input sector, output sector, agro-markets, rural developments, etc.   |                           |     |
| <b>Lecturer</b>                       | Dr. CSc Ernő Péter BOTOS, head of department, ass. professor, senior researcher, Márton Kocsis, assistant professor   |                           |     |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 3+0 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b></p> <p>- Botos E.P. (2016): A bor piaca és gazdaságtana. Budapest, Bor-Kép, 404 p., ISB 978-963-87391-2-4      - David L. Debertin (2015): Agricultural Production Economics. Second Edition. 411 p. University of Kentucky. ISBN-13 978-1469960647</p> <p><b>Recommended literature:</b></p> <p>- Bálint J. et al (2009): Vidékfejlesztés; Vidékfejlesztés menedzsment és marketing. Budapest, Budapest Corvinus Egyetem, 402 p ISB 978-963-503-396-6</p> <p>- A. Barkley, P.W. Barkley (2013): Principles of Agricultural Economics. Routledge, London &amp; New York. 347 p. ISBN: 978-0-415-54069-8</p> <p>- EuroStat website: <a href="http://ec.europa.eu/eurostat">http://ec.europa.eu/eurostat</a></p> <p>- FAO website: <a href="http://www.fao.org/home/en/">http://www.fao.org/home/en/</a></p> |                           |     |
| <b>Assessment:</b>                    | <ul style="list-style-type: none"> <li>• self-research, own study written and edited, individual PPT presentation. Permanent consultancy related to the students' reports.</li> <li>• exam</li> </ul>   |                           |     |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Applied Entomology   |                           |     |
| <b>Code</b>                           | 3RT07NAK01B  |                           |     |
| <b>Prerequisites</b>                  | Botany   |                           |     |
| <b>Description</b>                    | 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. |                           |     |
| <b>Lecturer</b>                       | Dr. Gábor Véték  |                           |     |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 2+2 |
| <b>Level</b>                          | BSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | Regular attendance of the lessons  |                           |     |
| <b>Reading:</b>                       | <b>Compulsory readings:</b>  |                           |     |

|                    |   |
|--------------------|---|
|                    | <p>van Emden H.F. (2013): Handbook of agricultural entomology. John Wiley and Sons, Chichester, West Sussex, UK, pp. 312.</p> <p><b>Recommended readings:</b></p> <p>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> <p>Peshin R. and Pimentel D. (eds.) (2014): Integrated pest management Vol. 4.: Experiences with implementation, global overview. Springer, Dordrecht, The Netherlands, pp. 574.</p> |
| <b>Assessment:</b> | Written and oral exams  |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Biological and Fitotechnical Resources of Viticulture   |                           |     |
| <b>Code</b>                           | 3SZ22NAK12M   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | Demand for quality wine is increasing, while consumption of bulk wine is significantly decreasing. High quality fruit is the alpha of quality wine production. To achieve proper fruit quality, well designed and physiologically grounded phytotechnical management (pruning and canopy management) has to be carried out. The course handles essential knowledge of the background and recent trends of the grape and wine sectors and practical viticulture based on solid knowledge of grapevine biology. |                           |     |
| <b>Lecturer</b>                       | Dr. Tamás Deák, Dr. Borbála Baló, Dr. György Lukácsy  |                           |     |
| <b>Semester</b>                       | 1st, fall   | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b></p> <p>- Jackson, RS (2008) Wine Science (3rd edition), Academic Press – Elsevier. 706 pp.</p> <p>- Coombe, B. G. and Dry, P. R. (2000) Viticulture vol 2. Winetitles, Adelaide, Australia. 376 pp.</p> <p><b>Recommended literature:</b></p> <p>- Keller, M (2010) The Science of Grapevines, Academic Press – Elsevier 377 pp.</p>   |                           |     |
| <b>Assessment:</b>                    | <ul style="list-style-type: none"> <li>• Students have to write a scientific essay of ~2000 word about a freely chosen, viticulture-related topic</li> <li>• exam</li> </ul>  |                           |     |

|                      |   |  |  |
|----------------------|---|--|--|
| <b>Title</b>         | Biological Bases of Entomology,   |  |  |
| <b>Code</b>          | 3RT07NAK04M   |  |  |
| <b>Prerequisites</b> | MSc level   |  |  |
| <b>Description</b>   | The basics of entomology are taught and revised in this course including the following range of subjects: morphology, taxonomy, ecology, population dynamics and zoogeography. This contributes to the better knowledge of horticultural pests and helps gathering all effective management methods. 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. Key biological aspects of the world of arthropods is presented through the introduction of selected model pests of horticultural crops. The presentations and text books about general entomology are available to students in flash and pdf format, respectively. The intention of the course is to provide basics about Entomology and pest management |  |  |



|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
|                                       | to students enrolled in the MSc in Horticulture program, so as to enhance their communication skills about pest management with graduates of Plant Medicine MSc programs.  |                           |     |
| <b>Lecturer</b>                       | Dr. József Fail and Dr. Viktor Markó   |                           |     |
| <b>Semester</b>                       | Fall   | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | Key pests and their damage symptoms are introduced from our insect collection. The use of compound microscopes in the course is necessary. The intriguing biology and ecology of a diverse group of arthropods is discussed including orders of: Orthoptera, Thysanoptera, Hemiptera, Coleoptera, Lepidoptera, Diptera, Hymenoptera, Prostigmata and Mesostigmata. Special emphasis is laid on tritrophic interactions and biological pest management. |                           |     |
| <b>Reading:</b>                       | Ciancio A. and Mukerji K. G. (eds.) (2007): General concepts in integrated pest and disease management. Springer, Dordrecht, The Netherlands, pp. 359.<br>Gillott C. (2005): Entomology. Third edition. Springer, Dordrecht, The Netherlands, pp. 831.   |                           |     |
| <b>Assessment:</b>                    | Written and oral exam  |                           |     |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Biological bases of plant pathology   |                           |     |
| <b>Code</b>                           | 3NK06NAK03M   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | Based on the Bachelor's degree, the subject presents the diseases of horticultural plants and cereals and the possible methods of plant protection. The aim of the subject is to make the students suitable for the recognition of plant diseases with skill levels, to know the possibilities of protection, including biological, mechanical, agrotechnical methods and pesticides as well.   |                           |     |
| <b>Lecturer</b>                       | László Palkovics DSc, professor; Marietta Petróczy PhD, associate professor; János Ádám MSc assistant lecturer, Gerda Magyar MSc, PhD student   |                           |     |
| <b>Semester</b>                       | Fall  | <b>Contact hours/week</b> | 2+2 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 4   |
| <b>Teaching and Learning Methods:</b> | Microscopical recognition of fungal structures  |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/>Summaries of the lectures and practices ensured by the Department</p> <p><b>Recommended literature:</b><br/>- Janse, J.D. (2006): Phytobacteriology: Principles and practice. Cabi International, London, UK (ISBN: 978-1-84593-025-8)<br/>- Carlile, J.M, Watkinson, S. C., Gooday, G. W. (2001): The fungi. Academic Press, UK (ISBN: 0-12-738445-6)</p> |                           |     |
| <b>Assessment:</b>                    | <ul style="list-style-type: none"> <li>• exam</li> <li>• microscopical recognition of fungal structures, recognition of pathogens on the bases of diseased plants</li> </ul>  |                           |     |

|                      |  |  |  |
|----------------------|--|--|--|
| <b>Title</b>         | Biologically active substances in horticultural species  |  |  |
| <b>Code</b>          | 3ME13NAK56M  |  |  |
| <b>Prerequisites</b> |  |  |  |
| <b>Description</b>   | Quality of horticultural products is highly determined by their active ingredients and content of secondary compounds. Knowledge on these and basic information on |  |  |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
|                                       | <p>diatetic considerations belongs to the well established education of horticultural engineers. During the course students get an insight in the spectrum of secondary compounds present in the wide range of horticultural crops and their products. Basic chemical constitution of the compounds, their biosynthesis and accumulation in the plants belongs to this knowledge. An additional important aspect is the way of their application, their human biological effects and eventual adverse reactions. The compounds are principally grouped according to their biogenetic relationships (saccharides, nitrogen containing compounds, terpenoids, phenolics, minerals, vitamins, etc.) and numerous plant examples are mentioned. During the practical lessons students get an insight into the laboratory analytical methodologies and their basic principles.</p> |                           |     |
| <b>Lecturer</b>                       | Éva dr. Zámoriné Németh, dr. Krisztina Szabó PhD, dr. Zsuzsanna Pluhár, PhD, dr. Szilvia Tavaszi- Sárosi, PhD, dr. Beáta Gosztola, PhD  |                           |     |
| <b>Semester</b>                       | Fall  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/>The course material is provided for the students by the lecturers in electronic format.</p> <p><b>Recommended literature:</b><br/>Evans W. C. (2009): Trease and Evans` Pharmacognosy. London, WB Saunders Company Ltd. ISBN: 978-0-7020-2933Hajós Gyöngyi</p>   |                           |     |
| <b>Assessment:</b>                    | Exam  |                           |     |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Biology and cultivation of fungi   |                           |     |
| <b>Code</b>                           | 3ZT14NAK41M  |                           |     |
| <b>Prerequisites</b>                  |  |                           |     |
| <b>Description</b>                    | <p>The mushroom cultivation is a specific horticultural segment. The taxonomical status of the fungi require specific approach for growing them, therefore strong principles of knowledge needed about their biological and ecological importance. The main aim of the subject is to have information about local and global mushrooms production technologies, trends, research and developments targets for the future. Finishing the course the students will have information about biology, life cycle, primary and secondary metabolites of relevant Basidiomycetes and Ascomycetes fungi. The students will know about artificial propagation of cultivated mushrooms and spawn production technologies, they will be able to evaluate by quality of this product. Detailed information will be shared by the most important cultivated species (Agaricus, Pleurotus, Lentinula, Ganoderma, Flammulina, Coprinus), their substrate preferences, growing conditions, market share. The integrated pest and disease management on a mushroom farm will be demonstrated. To increase the skills of the student, a laboratory work (establishing fungal culture, spawn preparation, mycelia preservation techniques) will be organized during the course.</p> |                           |     |
| <b>Lecturer</b>                       | Dr. András Geösel, Dr. Anna Szabó  |                           |     |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | student presentation, English vocabulary test  |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/><a href="http://kertesztananyag.hu/modern-mushroom-cultivation-technologies">http://kertesztananyag.hu/modern-mushroom-cultivation-technologies</a><br/>- shared presentations</p> <p><b>Recommended literature:</b></p>  |                           |     |

|                    |  |
|--------------------|--|
|                    | <ul style="list-style-type: none"> <li>- den Ouden M. (2016): Mushroom signals. A practical guide to optimal mushroom growing. Mushroom Office.</li> <li>- Stamets P. (2000) Growing Gourmet and Medicinal Mushrooms. Ten Speed Press, Toronto.</li> </ul> |
| <b>Assessment:</b> | exam   |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Biometrics   |                           |     |
| <b>Code</b>                           | 3MI09NAK08B  |                           |     |
| <b>Prerequisites</b>                  | Basic mathematics and informatics  |                           |     |
| <b>Description</b>                    | 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. |                           |     |
| <b>Lecturer</b>                       | Dr. Ladányi Márta associate professor, László Anna lecturer, Reiczigel Zsófia lecturer   |                           |     |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 1+2 |
| <b>Level</b>                          | BSc  | <b>ECTS</b>               | 4   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       |  |                           |     |
| <b>Assessment:</b>                    | Grades are given upon a student project report submitted at the end of the semester.   |                           |     |

|                                       |   |                           |   |
|---------------------------------------|---|---------------------------|---|
| <b>Title</b>                          | Business strategy planning in rural areas   |                           |   |
| <b>Code</b>                           | INTKT MM002   |                           |   |
| <b>Prerequisites</b>                  |   |                           |   |
| <b>Description</b>                    | <p>Strategy planning was developed in the military sciences and it was applied as a way of business planning in civil and economic life. Participants of economic life have some realizable aim and it should be achieved in competition. Business planning is the way to point out strategic aims, to identify the production, service and market positions and work out the timing and financial plan. During the course we focus on agricultural businesses and rural life in connection with rural development.</p> <p>The students fulfilling the course requirements will be able to</p> <ul style="list-style-type: none"> <li>- use methods of analysis, planning and organizing and they put it to practice via case studies.</li> <li>- understand the differences of various production methods</li> <li>- create financial plans and schedules</li> </ul> |                           |   |
| <b>Lecturer</b>                       | Márton Kocsis   |                           |   |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 4 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 5 |
| <b>Teaching and Learning Methods:</b> |   |                           |   |
| <b>Reading:</b>                       | <p>Compulsory readings:</p> <ul style="list-style-type: none"> <li>- Rural development reports of the European Union, e.g.: <a href="https://www.ifad.org/documents/30600024/30604583/RDR_WEB.pdf/c734d0c4-fbb1-4507-9b4b-6c432c6f38c3">https://www.ifad.org/documents/30600024/30604583/RDR_WEB.pdf/c734d0c4-fbb1-4507-9b4b-6c432c6f38c3</a></li> <li>- Rural Development Programs of FAO, e.g.: <a href="http://www.fao.org/economic/esa/esa-events/rtc/en/">http://www.fao.org/economic/esa/esa-events/rtc/en/</a></li> </ul>  |                           |   |

|                    |  |
|--------------------|--|
|                    | Recommended readings:<br>Green G. P. (2013): Handbook of Rural Development. University of Wisconsin-Madison, US. ISBN: 9781781006702 |
| <b>Assessment:</b> | Written and oral exam  |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Cultivation and Processing of Medicinal Plants (Basic Level)  |                           |     |
| <b>Code</b>                           | INTKT ME002   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | <p>The main purpose of the course is to give a comprehensive account on the botanical aspects, cultivation, drug forms and active ingredients of the most important medicinal and aromatic plants in Europe. Knowledge on use in the kitchen, perfumery and cosmetics or in modern therapy is discussed. The course has basic level, so basic terms are explained. It also includes the explanation of different groups of effective materials, the primary processing methods and factors influencing quality drug production or viewpoints to be taken into account when cultivation is managed. The students fulfilling the course requirements will be able to</p> <ul style="list-style-type: none"> <li>-identify the most important medicinal and aromatic plants and their drugs having importance in cultivation</li> <li>-get acquainted with the main aspects of their cultivation methods including primary processing,</li> <li>- understand the main criteria for producing quality drugs</li> <li>-get acquainted with the main pharmacological effects and other use</li> </ul> |                           |     |
| <b>Lecturer</b>                       | Éva Zámoriné Németh, Zsuzsanna Pluhár, Krisztina Szabó, Beáta Gosztola, Péter Radácsi, Szilvia Tavaszi-Sárosi   |                           |     |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 1+1 |
| <b>Level</b>                          | BSc, MSc  | <b>ECTS</b>               | 5   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | <p>Compulsory readings:</p> <ul style="list-style-type: none"> <li>-</li> </ul> <p>Recommended readings:</p> <ul style="list-style-type: none"> <li>- Hornok, L. (1992): Cultivation and processing of medicinal plants. Wiley, ISBN: 0471923834, 9780471923831</li> </ul>  |                           |     |
| <b>Assessment:</b>                    | Written exam  |                           |     |

|                                       |  |                           |                              |
|---------------------------------------|--|---------------------------|------------------------------|
| <b>Title</b>                          | Cultivation of Greenhouse Ornamentals  |                           |                              |
| <b>Code</b>                           | 3DD02NAK02B  |                           |                              |
| <b>Prerequisites</b>                  | -  |                           |                              |
| <b>Description</b>                    | <p>The subject provides general training on the most important areas of ornamentals growing in a greenhouse. Provides general knowledge on growing media, nutrient supply, growth regulators, and timing of cultivation. It details the cultivation technology of the most important greenhouse ornamental plants.</p>                         |                           |                              |
| <b>Lecturer</b>                       | Assoc. Prof. Dr. Andrea Tilly-Mándy, Assist. Prof. Dr. István Dániel Mosonyi, Assist. Prof. Dr. Máté Ördögh  |                           |                              |
| <b>Semester</b>                       | Fall   | <b>Contact hours/week</b> | 2+2 (+ 2 day field practice) |
| <b>Level</b>                          | BSc  | <b>ECTS</b>               | 4                            |
| <b>Teaching and Learning Methods:</b> | <p>Lectures, practices and field practices.</p> <ul style="list-style-type: none"> <li>- taking part on the practices is obligatory</li> <li>- taking part on the study visits and field exercises</li> <li>- bedding and balcony plant identification report</li> <li>- pot plant identification report</li> <li>- technology task</li> </ul> |                           |                              |

|                    |  |
|--------------------|--|
|                    | Oral examination in the examination period.  |
| <b>Reading:</b>    | HAMRICK, D. (ed.): Ball Redbook. Ball Publishing, Batavia Illinois, USA 2003.<br>POLLOCK, M. – GRIFFITH M.: RHS Illustrated Dictionary of Gardening. DK (Dorling Kindersley) London 2005 |
| <b>Assessment:</b> | obtaining signature + exam   |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Cultivation of special medicinal plants and spices ('Advanced level')  |                           |     |
| <b>Code</b>                           | 3ME13NBV23M  |                           |     |
| <b>Prerequisites</b>                  | botany, soil sciences, agrometeorology   |                           |     |
| <b>Description</b>                    | Botany, biology and environmental requirements, drugs and active agents of medicinal and aromatic plants having importance in temperate zones (additional list of species compared to the minimum list of BSc training). Cultivation techniques of these species. Virtual visit ( video film) of Hungarian firms - steps of primary processing of MAP species. Economically important MAP species in the world consumption, their drugs, active agents and utilization. Species having medical importance based on new scientific results.   |                           |     |
| <b>Lecturer</b>                       | Dr. Krisztina Szabó, Zámoriné dr. Németh Éva, Dr. Pluhár Zsuzsanna, Dr. Radácsi Péter, Dr. Gosztola Beáta  |                           |     |
| <b>Semester</b>                       | 4th, spring  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | Video film about visiting Hungarian MAP firms, machines of primary processing while working, etc.  |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b></p> <p>-Joanne Barnes, Linda A Anderson and J David Phillipson 2007. Herbal medicines. Third edition. ISBN 978 0 85369 623 0 (Related chapters)</p> <p><b>Recommended literature:</b></p> <p>Medicinal and Aromatic Plants – Industrial Profiles series. Harwood Academic Publishers, Amsterdam, The Netherlands:</p> <p>-Thea tree. ISBN 90-5702-417-9</p> <p>-Taxus. ISBN 0-415-29837-7</p> <p>-Tea. ISBN 0-415-27345-5</p> <p>-Fenugreek. ISBN 0-415-29657-9</p> <p>-V.L. Chopra, K.V. Peter 2005. Handbook of Industrial Crops. ISBN 1-56022-283-2 (Related chapters)</p> <p>-Ram J. Singh 2012. Genetic resources, chromosome engineering, and crop improvement. Vol. 6. ISBN 978-1-4200-7384-3 (Related chapters)</p> |                           |     |
| <b>Assessment:</b>                    | exam   |                           |     |

|                      |  |                           |     |
|----------------------|--|---------------------------|-----|
| <b>Title</b>         | Environmental Management   |                           |     |
| <b>Code</b>          | 3KT23NAK08B  |                           |     |
| <b>Prerequisites</b> |  |                           |     |
| <b>Description</b>   | Global Monitoring Networks for Meteorological and Hydrological Observations, climate change, a global and multidisciplinary issue.<br>Adaptation to climate change in the fields of agriculture. Water management and human/animal health, a growing European and global challenge. Assessment of air quality and atmospheric deposition by model computations<br>Water pollution and water protection; the main wastewater treatment and drinking water treatment technologies.<br>Soil pollution, soil conservation strategies in Europe and in Hungary. |                           |     |
| <b>Lecturer</b>      | Prof. Dr. Borbála Biró DSc, Prof. Dr. László Bozó DSc  |                           |     |
| <b>Semester</b>      | Fall   | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>         | BSc, MSc   | <b>ECTS</b>               | 4   |

|                                       |  |
|---------------------------------------|--|
| <b>Teaching and Learning Methods:</b> | Pdf version of lectures will be provided. The most relevant and up to date knowledge in published books and articles will be also available by students. The course includes a field trip to wastewater treatment plant of Budapest.   |
| <b>Reading:</b>                       | Broniewicz, B (ed.)(2011): Environmental Management in Practice. Interweb.org. Rijeka (Croatia)<br>Theodore, M.K – Theodore, L. (2009): Introduction to Environmental Management. CRC Press<br>Sarker, S. (ed.)(2010): Environmental Management. Sciyo Intech<br>Where the land is greener? - World Overview of Conservation and technologies – WOCAT Publication – 2007 |
| <b>Assessment:</b>                    | Participation at the practical presentations and field practices, learning the written materials provided and writing the exam test during the course.   |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Evaluation of Fruit Cultivars   |                           |     |
| <b>Code</b>                           | 3GY15NAK19M   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | The educational aim of the course is to discuss the values of fruit cultivars in the light of the orchard management and other aspects of utilization (nutritional biology, production, market-, raw material, ornamental and breeding value), using the knowledge provided by the basic subjects and the BSc material. Fruit breeding trends and achievements all around the world. Introduction to the cultivars of woody fruit species suggested to be grown in Hungary. The proper way of choosing cultivar, and the cultivar-composition is essential for the profitable production, thus our further goal is to provide information about the main aspects of pairing cultivars within the orchard. |                           |     |
| <b>Lecturer</b>                       | Dr. Gitta Ficzek; Dr. László Szalay, Dr. Gergely Simon; Dávid Papp,   |                           |     |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | Lectures and individual presentations and essays  |                           |     |
| <b>Reading:</b>                       | <b>Compulsory literature:</b><br>a <a href="http://kertesztananyag.hu/evaluation-of-fruit-cultivars">http://kertesztananyag.hu/evaluation-of-fruit-cultivars</a><br>• Janick, J. And Moore, J. N. 1996. Fruitbreeding. John Wiley and Sons, Inc. New York. (válogatott fejezetek)<br>Kozma, P., Nyéki, J., Soltész, M. és Szabó, Z. 2003: FloralBiology, pollination and fertilisationintemperaturezonefruit species and grape. Akadémiai Kiadó, Budapest. (selectedchapters)   |                           |     |
| <b>Assessment:</b>                    | • Students have to write a scientific essay of 8-10 pages, and have to give a sort presentationa about their freely chosen topic<br>exam  |                           |     |

|                      |  |  |  |
|----------------------|--|--|--|
| <b>Title</b>         | Experimental Design and Evaluation   |  |  |
| <b>Code</b>          | 3MI09NCS05M  |  |  |
| <b>Prerequisites</b> |  |  |  |
| <b>Description</b>   | As a continuation of an introductory course, statistical methods are discussed with several applications in biometrics in a practical and interactive way. Seminars are organized in a computer laboratory. Statistical evaluations are conducted by IBM SPSS software.<br>Grades are given upon a student project report submitted at the end of the semester.<br>Discussed topics:<br>1. Statistical hypothesis testing; null hypothesis, alternative hypothesis<br>2. Type I and Type II errors, significance level |  |  |

|                                       |  |                           |   |
|---------------------------------------|--|---------------------------|---|
|                                       | <p>3. Nonparametric test: normality tests (Chi-square test; Kolmogorov-Smirnov's test; Shapiro-Wilk's test, d'Agostino's test), PPlot, data transformation for normality;</p> <p>4. Confidence intervals for the expected values and variance of a normally distributed population</p> <p>5. Nonparametric test: Chi-square test of independence</p> <p>6. One-and two-sample parametric tests of variance: Chi-square test, Fisher's test;</p> <p>7. One-and two-sample parametric tests of expected value: Student's t test, Welch's test; paired t test</p> <p>8. Bartlett's test; Levene's test;</p> <p>9. One way analysis of variance; two way analysis of variance; interaction, post hoc tests; random block design, mixed models, write-up</p> <p>10. Correlation</p> <p>11. Linear regression model</p> <p>12. Regression diagnostics, write-up;</p> <p>13. Nonlinear regression models, data transformation.</p> <p>After having completed the course, students will be able to create experimental design, to manage the data and to evaluate the observations correctly, moreover, to report the results in a suitable manner. They can apply their skills in publishing scientific papers as they learn how to present and reason their findings and conclusions professionally.</p> |                           |   |
| <b>Lecturer</b>                       | Dr. Ladányi, Márta PhD, associate professor, head of department  |                           |   |
| <b>Semester</b>                       | Fall   | <b>Contact hours/week</b> |   |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 2 |
| <b>Teaching and Learning Methods:</b> |  |                           |   |
| <b>Reading:</b>                       |  |                           |   |
| <b>Assessment:</b>                    |  |                           |   |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Flowering, Fruit and Seed Physiology   |                           |     |
| <b>Code</b>                           | 3MN24NCV03B  |                           |     |
| <b>Prerequisites</b>                  | Successful completion of BSc courses in Plant Biochemistry and Plant Physiology as well as in Plant Genetics   |                           |     |
| <b>Description</b>                    | <p>The course builds on, and extends existing knowledge about physiology and genetics related to plant generative development. Specific areas of flowering, pollination, sexual incompatibility, fertilization, fruit development, ripening, post harvest processes and seed biology are reviewed. Lectures cover topics from a molecular biological perspective, but commercial aspects are also highlighted. Possibilities for biotechnological intervention in horticulture are emphasized during the course. While doing laboratory practices students gain hands-on experience about some basic concepts of fruit and seed biology.</p> |                           |     |
| <b>Lecturer</b>                       | Dr. István Papp, Dr. Júlia Halász, Dr. Attila Hegedűs, Dr. Erzsébet Kissné Bába, Dr. Anita Szegő, Adrienn Kerekes, Dr Iman Mirmazloum  |                           |     |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 2   |
| <b>Teaching and Learning Methods:</b> | Lecture and laboratory practice  |                           |     |
| <b>Reading:</b>                       | <p>Compulsory readings: Eds. Taiz and Zeiger: Plant Physiology</p> <p>Recommended readings: review papers of the specific scientific areas covered, specified further during the course</p>  |                           |     |
| <b>Assessment:</b>                    | Written exam   |                           |     |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Forcing in Soilless Systems   |                           |     |
| <b>Code</b>                           | 3ZT14NAK40M   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | The aim of the course is to describe the technical, ecological and economic possibilities of cultivation in that conditions where the soil is unsuitable for horticultural production. Hydroponic, aggregate and aeroponic technologies and technology versions are presented and evaluated. The reasons and circumstances that cause hydroponic production are described, together with the advantages and disadvantages of isolated cultivation. Students can learn about media, chemicals and other materials used in soilless technologies, as well as technical solutions for hydroponic cultivation. The theoretical basics and practice of climate controlling and nutrient composition will be described. Propagation technologies are presented. A detailed description of the soilless cultivation technologies of the main vegetable and ornamental plants are described |                           |     |
| <b>Lecturer</b>                       | Dr. Katalin Slezák, Balázs Gábor PhD, Geösel András PhD, Kappel Noémi PhD, Ördögh Máté PhD, Pap Zoltán PhD, Simon Gergely PhD Szabó Anna PhD  |                           |     |
| <b>Semester</b>                       | Fall  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | preparing PPT presentation in the given topic   |                           |     |
| <b>Reading:</b>                       | Compulsory literature:<br>Savvas, D., Passam, H. (szerk.) (2002): Hydroponic Production of Vegetables and Ornamentals. Athens. Embryo Publications. ISBN: 9608002125.   |                           |     |
| <b>Assessment:</b>                    | exam  |                           |     |

|                                       |   |                           |   |
|---------------------------------------|---|---------------------------|---|
| <b>Title</b>                          | Genetics and Plant Breeding   |                           |   |
| <b>Code</b>                           | 3GN18NAK01B   |                           |   |
| <b>Prerequisites</b>                  | Basic biological knowledge recommended  |                           |   |
| <b>Description</b>                    | Nowadays, requirement for the study of genetics is increasing everywhere around. The aim of the course is transmitting the basic genetics knowledge indispensable to understand the main streams in the modern biology and plant breeding. The first part of the course spans the problems of classical and molecular genetics. The second part offers the brief survey plant breeding methods including the up to day results of biotechnology.<br>Aims and objectives and description of the course: The aim of the subject is to transmit the genetics knowledge necessary to study the main horticulture topics and to spread out the general biological skills of the students.                                  |                           |   |
| <b>Lecturer</b>                       |   |                           |   |
| <b>Semester</b>                       | Fall, Spring  | <b>Contact hours/week</b> |   |
| <b>Level</b>                          | BSc, MSc  | <b>ECTS</b>               | 4 |
| <b>Teaching and Learning Methods:</b> | Methodology to be used: Lectures:<br>Chemical composition of nucleic acids and proteins<br>Mechanisms of cell division as tool for passing on the genetics information between the cells and generations<br>Specific features of the plant genome, steps of the DNA replication<br>Structure of eukaryotic gene, transcription, translation<br>Basic rules of the classical genetics<br>Polyploidy and aneuploidy<br>Reproduction systems in plant and their influence on breeding methods<br>The genetics of hybridisation, pure line breeding, the pedigree method back crossing<br>The role of F1 hybrids in horticulture production<br>Molecular markers application in plant breeding - marker assisted breeding |                           |   |



|                    |  |
|--------------------|--|
|                    | <p>Seminaries and practices:<br/> Construction of the DNA model (manual work)<br/> Comparison of the mitosis and meiosis (seminary)<br/> From the nucleotide sequences to the amino acid sequences (seminary)<br/> Classical genetics (tests)<br/> Visit in Syngenta Ltd Breeding Station Ócsa (excursion)<br/> PCR practice (laboratory practice)<br/> The basic techniques in plant tissue culture (laboratory practice).</p>  |
| <b>Reading:</b>    | <p>Compulsory readings:<br/> • Campbell, Reece, Mitchell: Biology. Addison Wesley Longman, Inc. USA, 1999.<br/> Recommended readings:<br/> • Rattan Lal Agrawal: Fundamentals of plant breeding and hybrid seed production. Science Publishers, Inc. USA, 1998.<br/> • Edited by Nigel G. Halford: Plant biotechnology. Current and future applications of genetically modified crops. John Wiley &amp; Son, Ltd., 2006<br/> • A.J. Richards: Plant breeding systems. Chapman &amp; Hall, 1997<br/> • Chahal, Gosal: Principles and procedures of plant breeding Biotechnological and conventional approaches. Alpha Science International Ltd., Harrow, U.K., 2002.</p> |
| <b>Assessment:</b> | Exam   |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Plant geography and plant ecology   |                           |     |
| <b>Code</b>                           | 3NT20NAK08M   |                           |     |
| <b>Prerequisites</b>                  | Plant Systematics   |                           |     |
| <b>Description</b>                    | <p>In the frame of this course students will get acquainted with the floral diversity of the world, with the main floristical, chorological aspects and natural distribution of plant species, the origin and evolution of cultivated plants. Lectures will enlighten the historical background and anthropogenic impact of the changing diversity on the mainlands. Lectures are dedicated for the main aspects of population ecology of plants, traits of plant populations and their behaviour, dispersal, migration, life strategies. How plant species are able to adapt to the changing environment and what are the main morpho-anatomical and phenological aspects of ecological adaptations. Lecture will focus also on the population relationships within the ecosystems and on the basis of community organisation including aspects of natural succession, how population relationships progress within the horticultural systems how can be degradation avoided. Finally, the course will summaries the most important ecological features of the sustainable horticulture in the time of the ongoing environmental change.</p> |                           |     |
| <b>Lecturer</b>                       | Maria Höhn associate professor CSc  |                           |     |
| <b>Semester</b>                       | Fall  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | field practice  |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/> - Höhn M. (2013): Botany V-X chapters In: Éva Németh-Zámbori, Szilvia Sárosi, Levente Horváth: Modern Horticulture, Corvinus University of Budapest, Fac. of Horticultural Science. (ISBN 978-963-503-552-6)<br/> - Erős-Honti Zs. (2013): Botany I-IV chapters In: Éva Németh-Zámbori, Szilvia Sárosi, Levente Horváth: Modern Horticulture, Corvinus University of Budapest, Fac. of Horticultural Science. (ISBN 978-963-503-552-6)<br/> <b>Recommended literature:</b><br/> - Ricklefs, R.E. - Miller, G.L. (2000): Ecology. W.H. Freeman and Company, New York, USA. (ISBN 978-0716728290)<br/> - van der Maarel, E. (2006): Vegetation ecology. Blackwell publishing.(ISBN 978-0-632-05761-0)</p>   |                           |     |

|                    |  |
|--------------------|--|
| <b>Assessment:</b> | <ul style="list-style-type: none"> <li>written test paper</li> <li>tematic persentation</li> </ul> |
|--------------------|--|

|                                       |   |                           |   |
|---------------------------------------|---|---------------------------|---|
| <b>Title</b>                          | Growing of Nut Fruit Species  |                           |   |
| <b>Code</b>                           | INTKT GY004   |                           |   |
| <b>Prerequisites</b>                  |   |                           |   |
| <b>Description</b>                    | <p>The educational aim of the course is to discuss the background of temperate zone not fruit grooving:</p> <p>Statistical data of nut fruit production. Breeding trends of walnuts, almonds, hazelnuts and chestnut. Introduction of market and industrial values of different nut fruit specie from the aspect of the food industry. Introduction of commercial grown cultivars and rootstocks. Short introduction their orchard management.</p>  |                           |   |
| <b>Lecturer</b>                       | Dr. Gergely Simon; Dávid Papp   |                           |   |
| <b>Semester</b>                       | Fall  | <b>Contact hours/week</b> | 4 |
| <b>Level</b>                          | BSc, MSc  | <b>ECTS</b>               | 5 |
| <b>Teaching and Learning Methods:</b> | Lectures and individual presentations and essays  |                           |   |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b></p> <p>Lyle, S. 2006. Fruit and Nuts: A Comprehensive Guide to the Cultivation, Uses and Health Benefits of over 300 Food-Producing Plants. Timber Press, Incorporated. ISBN: 978-0881927597.</p> <p>J Janick /editor/ 2008. Enciklopedia of Fruits and Nuts. Department of Tropical Plant and Soil Sciences, University of Hawaii at Manoa, Hawaii.</p> <p>Kadel A., Sommer N.F., Arpaia M.L. 2002. Hostharvest Handling Tree Nuts. In Kadel A. /ed./Postharvest Technology of Horticultural Crops. University of California, Oakland, California USA. p.399-406.ISBN: 1879906511</p> <p>Ramos D.E. /tchn. ed./ 1998. Walnut production manual. University of California, Divison of Agriculture and Natural Resources. Oakland, California, USA. ISBN: 1879906279.</p> |                           |   |
| <b>Assessment:</b>                    | <ul style="list-style-type: none"> <li>Students have to write a scientific essay of 8-10 pages, and have to give a two sort presentations about their freely chosen nut fruit topic or exam</li> </ul>  |                           |   |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Horticultural Dendrology  |                           |     |
| <b>Code</b>                           | 3DD02NBV27M   |                           |     |
| <b>Prerequisites</b>                  | -   |                           |     |
| <b>Description</b>                    | <p>The course provides general training in key areas of horticultural dendrology and urban horticulture. Introduction to Horticultural Dendrology. Deciduous trees and shrubs (plant knowledge). Visit to International Dendrological Foundation to Budakeszi. Visit to Jaroslaw Chabin Nursery in Páty. Evergreens (plant knowledge). Visit in the Herbarium of the Hungarian Natural History Museum. Propagation of woody plants.</p> |                           |     |
| <b>Lecturer</b>                       | Assist. Prof. Dr. Magdolna Sütöri-Diószegi, Assist. Prof. Dr. Máté Ördögh   |                           |     |
| <b>Semester</b>                       | Fall  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | <p>Lectures, practices and field practices.</p> <p>Plant identification tests:</p> <ol style="list-style-type: none"> <li>Decidious ornamental trees and shrubs</li> <li>Evergreens</li> </ol> <p>Written and oral examination in the examination period.</p>   |                           |     |

|                    |   |
|--------------------|---|
| <b>Reading:</b>    | <p>(1991): The Hillier Manual of Trees and Shrubs. Hillier Nurseries Ltd., Ampfield, Romsey (England)</p> <p>BÄRTELS, A. (1989): Gehölzvermehrung. Ulmer Verlag, Stuttgart</p> <p>BÄRTELS, A. (1995): Der Baumschulbetrieb. Ulmer Verlag, Stuttgart</p> <p>Dirr, M. A (1998): Manual of Woody Landscape Plants. Stipes Publ. Company, Champaign, Illinois, USA.</p> <p>Hoffman, M. H. A. (2005): List of Names of Woody Plants. International standard ENA 2005-2010, Applied Plant Research. Boskoop, the Netherlands.</p> <p>KRÜSSMANN, G. (1978): Die Baumschule. Paul Parey Verlag, Berlin-Hamburg</p> <p>Krüssmann, G. (1985): Manual of Cultivated Conifers. Timber Press, Portland, Or., USA.</p> <p>Krüssmann, G. (1989): Manual of Cultivated Broad-leaved Trees and Shrubs. Timber Press, Portland, Or., USA.</p> <p>Krüssmann, G. (1990): Manual of Woody Landscape Plants. Stipes Publ. Company, USA.</p> <p>MACDONALD, B. (1989): Practical Woody Plant Propagation for Nursery Growers. B. Y. Batsford Ltd., London</p> <p>Schmidt G. 2006: Woody ornamentals (CD ROM with 3000 photos. Text in Hungarian!)</p> <p>Hámori Z. Schmidt G. Ornamentals from A to Z (CD ROM with 1400 photos. Text in Hungarian!)</p> |
| <b>Assessment:</b> | obtaining signature + exam  |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Horticultural information systems   |                           |     |
| <b>Code</b>                           | 3MI09NAK13M   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | The aim of the course is to review IT and information systems and methods related to horticulture and agriculture in order to prepare the decision support. Based on the previously acquired IT knowledge, linear programming modelling and statistical analysis methods are applied to solve specific tasks that can be used in horticulture. Complex practical tasks provide broad basis for solving IT tasks related to agriculture  |                           |     |
| <b>Lecturer</b>                       | Dr. Márta Ladányi, Anna László assistant lecturer   |                           |     |
| <b>Semester</b>                       | Fall  | <b>Contact hours/week</b> | 1+2 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | <p><b>Recommended literature:</b></p> <p>- Joyce J. Nielsen (2016) Microsoft Official Academic Course, MICROSOFT EXCEL 2016. Wiley. ISBN: 978-1-11-927299-1<br/> <a href="https://dit.ie/media/ittraining/msoffice/MOAC_Excel_2016_Core.pdf">https://dit.ie/media/ittraining/msoffice/MOAC_Excel_2016_Core.pdf</a></p> <p>- Bernard W. Taylor (2013): Introduction to Management Science. Virginia Polytechnic Institute and State University (11th Edition)<br/> <a href="http://www.academia.edu/7219878/Introduction_to_Management_Science_11th_Edition-_Bernard_W_Taylor_III">http://www.academia.edu/7219878/Introduction_to_Management_Science_11th_Edition-_Bernard_W_Taylor_III</a></p> |                           |     |
| <b>Assessment:</b>                    | <ul style="list-style-type: none"> <li>• test and presentation</li> <li>• exam</li> </ul>   |                           |     |

|                      |  |
|----------------------|--|
| <b>Title</b>         | Horticultural Marketing and Quality Management |
| <b>Code</b>          | 3MM11NAK07B                                    |
| <b>Prerequisites</b> |  |

|                                       |   |                           |   |
|---------------------------------------|---|---------------------------|---|
| <b>Description</b>                    | <p>Objective of the class is to provide basic marketing knowledge to students involved in horticultural higher education. Students finishing the class are able to understand and supervise basic marketing activities in horticulture and related food and non-food industries.</p> <ol style="list-style-type: none"> <li>1. Introduction, what is marketing?</li> <li>2. Conditions of marketing activities</li> <li>3. Product and product utility (fmcg)</li> <li>4. Product life cycle /market life of a product/</li> <li>5. Diffusion theory, adaptation, innovator, loyalty ladder</li> <li>6. Brand – trade mark law ®, TM, PAT.</li> <li>7. Brand – trade mark marketing</li> <li>8. Price- rebate</li> <li>9. Consumer price discount, sales</li> <li>10. Market research</li> <li>11. Strategic behavior (strategy 1.)</li> <li>12. Marketing strategy (strategy 2.)</li> <li>13. Advertising communication</li> <li>14. Distribution, wholesale (1)</li> <li>15. Distribution, quality control</li> <li>16. Franchising, brand-partner, ready-made business</li> <li>17. Basics of retail (1)</li> <li>18. Retail Concepts (2)</li> <li>19. Merchandizing</li> <li>20. Sales promotion</li> <li>21. Food-service marketing</li> </ol> |                           |   |
| <b>Lecturer</b>                       | Dr. habil Székely Géza, Ph.D.   |                           |   |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> |   |
| <b>Level</b>                          | BSc   | <b>ECTS</b>               | 4 |
| <b>Teaching and Learning Methods:</b> |   |                           |   |
| <b>Reading:</b>                       | Székely - Sipos – Kiss – Kocsis: Basic Marketing<br>Aula Publishing Co., Budapest, 2006   |                           |   |
| <b>Assessment:</b>                    | Colloquium (oral exam)  |                           |   |

|                    |  |
|--------------------|--|
| <b>Reading:</b>    |  |
| <b>Assessment:</b> |  |

|                      |   |                           |     |
|----------------------|---|---------------------------|-----|
| <b>Title</b>         | Integrated Pest Management  |                           |     |
| <b>Code</b>          | 3NK06NAK03B   |                           |     |
| <b>Prerequisites</b> | Applied Entomology, Plant Pathology   |                           |     |
| <b>Description</b>   | <p>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.</p> |                           |     |
| <b>Lecturer</b>      | Prof. Dr. László Palkovics, Dr. Béla Péntzes, Dr. József Fail, Dr. Gábor Véték, Dr. Gábor Markó, Dr. János Ádám   |                           |     |
| <b>Semester</b>      | 7th, fall   | <b>Contact hours/week</b> | 3+0 |
| <b>Level</b>         | BSc   | <b>ECTS</b>               | 5   |

|                                       |   |
|---------------------------------------|---|
| <b>Teaching and Learning Methods:</b> | Fulfilment of field practice, submission of an Integrated pest management plan of a horticultural crop plant  |
| <b>Reading:</b>                       | <b>Recommended readings:</b><br>Ciancio A. and Mukerji K. G. (eds.) (2007) General concepts in integrated pest and disease management Springer, Dordrecht, The Netherlands, pp. 359.<br>Peshin R. and Pimentel D. (eds.) (2014): Integrated pest management Vol. 4.: Experiences with implementation, global overview. Springer, Dordrecht, The Netherlands, pp. 574.<br>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. |
| <b>Assessment:</b>                    | oral examination  |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Modern systems in production and commerce of ornamentals  |                           |     |
| <b>Code</b>                           | 3DD02NAK64M   |                           |     |
| <b>Prerequisites</b>                  | -   |                           |     |
| <b>Description</b>                    | Students get global knowledge about the greenhouse and open ground ornamental plant production. They meet with the basis of plant growth regulation, the possibilities of growth regulation of ornamental plants and the timing methods. They meet with the main trends of ornamental breeding, the specialities of postharvest and trade. The subject negotiates the Hungarian, regional and European trends, changes and possibilities.   |                           |     |
| <b>Lecturer</b>                       | Assoc. Prof. Dr. Andrea Tilly-Mándy, Assist. Prof. Dr. István Dániel Mosonyi, Assist. Prof. Dr. Máté Ördög  |                           |     |
| <b>Semester</b>                       | 4th, spring   | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 34  |
| <b>Teaching and Learning Methods:</b> | Lectures and practices.<br>Plant identification test: pot flowers and foliage pot plants<br>Written examination in the examination period.  |                           |     |
| <b>Reading:</b>                       | <b>Compulsory literature:</b><br>Presentations of the lessons (available on the homepage of Department)<br>- <a href="http://kertesztananyag.hu/modern-systems-in-production-and-commerce-in-ornamentals">http://kertesztananyag.hu/modern-systems-in-production-and-commerce-in-ornamentals</a><br>- Hamrick, D. 2003. Ball Redbook I-II. Ball Publishing, Batavia Illionis, USA - determined parts<br>- Larson, R.A. 1992. Introduction to Floriculture. Academic Press, INC. San Diego, New York, Boston, London, Sydney, Tokyo, Toronto<br><b>Recommended literature:</b><br>Reed, D.W. 1996. Water, Media and Nutrition of Greenhouse Crops. Ball Publishing, Batavia, Illionis, USA |                           |     |
| <b>Assessment:</b>                    | obtaining signature + exam  |                           |     |

|                      |  |                           |     |
|----------------------|--|---------------------------|-----|
| <b>Title</b>         | Molecular genetics and gene technology of plants   |                           |     |
| <b>Code</b>          | 3GN18NAK06M  |                           |     |
| <b>Prerequisites</b> | BSc level genetics   |                           |     |
| <b>Description</b>   | Our primary goal is to expand the knowledge of genetics and molecular biology. In this context, the molecular genetic and genetechnology knowledge required for breeding and biotechnological applications will be presented. The genetic control of plant development, the molecular genetic basis of biotic (eg virus, bacteria, insect) and abiotic (eg heat, cold) stress reactions are treated with special emphasis. The latest methods and results of genomics and genetic engineering are also introduced. |                           |     |
| <b>Lecturer</b>      | Dr. Attila Hegedűs, Dr. Júlia Halász, Dr. Zsuzsanna György   |                           |     |
| <b>Semester</b>      | 1st, fall  | <b>Contact hours/week</b> | 2+1 |

|                                       |  |             |   |
|---------------------------------------|--|-------------|---|
| <b>Level</b>                          | MSc  | <b>ECTS</b> | 3 |
| <b>Teaching and Learning Methods:</b> |  |             |   |
| <b>Reading:</b>                       | <b>Compulsory literature:</b><br>Klug, W.S., Cummings, K. (2014) Concept of Genetics. Pearson, USA |             |   |
| <b>Assessment:</b>                    | exam   |             |   |

|                                       |  |                           |   |
|---------------------------------------|--|---------------------------|---|
| <b>Title</b>                          | Molecular markers  |                           |   |
| <b>Code</b>                           | 3GN18NCS30B  |                           |   |
| <b>Prerequisites</b>                  | BSc level genetics   |                           |   |
| <b>Description</b>                    | The aim of the course is to provide an opportunity to the students to get know the up-to-date molecular marker technologies. The 'traditional' techniques like RAPD, AFLP, SSR, ISSR, CAPS, SCAR, ILP, SSCP, IRAP, REMAP, RBIP are also discussed and the advantages and disadvantages are listed. Marker development procedures are expounded. The students learn the principles of the Sanger sequencing and also the next generation sequencing techniques and also the available marker systems based on NGS are presented. The course gives an insight to the genetic mapping with the aid of molecular markers. Marker assisted breeding and some examples are shown and also the use of molecular markers in population genetic studies is covered. |                           |   |
| <b>Lecturer</b>                       | Dr. Zsuzsanna György , Dr. Júlia Halász,   |                           |   |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 2 |
| <b>Level</b>                          | BSc, MSc, PhD  | <b>ECTS</b>               | 2 |
| <b>Teaching and Learning Methods:</b> |  |                           |   |
| <b>Reading:</b>                       | <b>Compulsory literature:</b><br>Robert J. Henry: Molecular Markers in Plants, Wiley<br>Sven Bode Andersen: Plant Breeding from Laboratories to Fields, Intech   |                           |   |
| <b>Assessment:</b>                    | oral exam  |                           |   |

|                      |   |  |  |
|----------------------|---|--|--|
| <b>Title</b>         | Multivariate Statistical Methods  |  |  |
| <b>Code</b>          | 3MI09NVC13P   |  |  |
| <b>Prerequisites</b> | Basic mathematics and statistics  |  |  |
| <b>Description</b>   | <p>During the semester, based on the knowledge the students have acquired in BSc/MSc/PhD level standard Biometrics and Statistics courses, some chapters of multivariate statistics will be discussed with complex applications in computer lab in a practical way with many examples from agriculture fitted specially to the demands of the students. We use the statistical software IBM SPSS.</p> <p>Discussed topics</p> <ol style="list-style-type: none"> <li>1. MANOVA: assumptions, interpretation of the results, write-up, visualization</li> <li>2. Multivariate regression analysis, multicollinearity, stepwise method</li> <li>3. Dummy variables, logistic regression for binary dependent variables</li> <li>4. Cluster analysis methods: K-means; hierarchical methods, two-way clustering; advantages and disadvantages; similarity and dissimilarity indices; clustering mixed data; representation techniques</li> <li>5. Discriminant analysis and diagnostics</li> <li>6. Data reduction methods: principal component analysis; factor analysis, learning latent structures; spatial rotation; representation; diagnostics</li> <li>7. Data reduction methods applied in general linear models</li> </ol> <p>Learning outcomes: After having completed the course, students will be able to manage multivariate data and to evaluate the observations choosing the</p> |  |  |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
|                                       | appropriate method correctly, moreover, to report the results in a suitable manner. They can apply their skills in publishing scientific papers as they learn how to present and reason their findings and conclusions professionally. |                           |     |
| <b>Lecturer</b>                       | Dr. Ladányi, Márta PhD, associate professor, head of department  |                           |     |
| <b>Semester</b>                       |  | <b>Contact hours/week</b> | 0+2 |
| <b>Level</b>                          | PhD  | <b>ECTS</b>               | 6   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       | Recommended readings:<br>TABACHNICK B.G. and FIDELL L.S. (2013). Using Multivariate Statistics. 6th ed. Boston, Pearson.<br>Special handouts are available during the course.  |                           |     |
| <b>Assessment:</b>                    | Grades are given upon a student project report submitted at the end of the semester.   |                           |     |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Natural Resources and Nature Protection   |                           |     |
| <b>Code</b>                           | 3KT23NAK11M   |                           |     |
| <b>Prerequisites</b>                  | -   |                           |     |
| <b>Description</b>                    | During the course students become acquainted with the properties and relationships of renewable and non-renewable natural resources and its real value in the Earth. They obtain the required special geoscience and environmental protection skills, furthermore an only „One-Earth” way of thinking. Their knowledge acquired during the BSc course will be extended with the relevant scientific achievements and methods of geology, soil science, climate science and water resource management. The course’s objective is that students should obtain a system approach, that is necessary to analyse and study natural resources, as well as get acquainted with the scientific background of research work on these main topics. Case studies and „state of the art” topics will be also discussed during the course with student’s activities.   |                           |     |
| <b>Lecturer</b>                       | Prof. Dr. Borbála Biró DSc, Prof. Dr. László Bozó DSc, Dr. Levente Kardos   |                           |     |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | BSc, MSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | Pdf version of lectures will be provided. The most relevant and up to date knowledge in published books and articles will be also available by students.  |                           |     |
| <b>Reading:</b>                       | Wendell A. Duffield and John H. Sass: Geothermal energy. Clean power from the Earth’s heat. USGS Science for a changing World. USA Dept. of Interior Geological Survey.pp. 36.<br>Bíró B (2011): The biomass energy (A biomassza energia). pp. 86., EDUWEB Zrt. (in Hungarian). <a href="http://docplayer.hu/12381787-Biomassza-hasznositas-biro-borbala.html">http://docplayer.hu/12381787-Biomassza-hasznositas-biro-borbala.html</a> .<br>Khan Towhin Osman (2013): Soils. Principles, Properties and Management. Springer. ISBN 978- 94-007-5663-2 (eBook)<br>Benefield LD, Randall CW (1980): Biological process design for wastewater treatment. Prentice-Hall, Inc., Englewood Cliffs, N. J. 293-319.<br>Schroeder ED (1977): Water and wastewater treatment: 217-233, 262-277, 313-337.<br>Kasza Gy; Bódi B; Sárközi E; Mázsa Á; Kardos L (2015): Vermicomposting of sewage sludge – Experiences of a laboratory study. International Journal of Bioscience, Biochemistry and Bioinformatics. Vol5(1), pp. 1-10. ISSN 2010-3638<br>Mészáros E (1993): Global and Regional Changes in Atmospheric Composition. Lewis Publishers, London, Tokyo, pp. 175. |                           |     |
| <b>Assessment:</b>                    | Final exam will be on a written way to answer of 5 selected questions from this 3 different topics, originating from each of the lecturers. Several questions or topics will be provided preliminary for the students and pdf forms of the lectures. The participation is not compulsory; however, it is highly suggested.  |                           |     |

|  |   |
|--|---|
|  | The answer of written lecture can have a 70% value in the final mark. Other 30% will be given by evaluating the student's activity and preparation, presentation of 1 pdf/students work during the course. This work and its personal presentation is compulsory for the acceptance of course participation. A potential list of discussion and presentation topics is provided. Other topics is also possible to select it by the student, if it is belonging to the topic of the course of NR-NP. |
|--|---|

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Non chemical weed management   |                           |     |
| <b>Code</b>                           | 3OG55NCS73B  |                           |     |
| <b>Prerequisites</b>                  |  |                           |     |
| <b>Description</b>                    | <p>Since weed problems give a remarkable part of work-, time- and money-consumption of agricultural production and herbicides mean a significant environmental load, it is important to know when and how to regulate weeds without chemicals. The course provides basic knowledge about weed ecology, the most dangerous groups of weeds. and methods of non-chemical weed management based on this knowledge.</p> <ol style="list-style-type: none"> <li>1. A new approach to weeds</li> <li>2. The ecology of weeds: classification, allelopathy, germination, vegetative propagation</li> <li>3. Controlling weeds: husbandry practices, direct mechanical and thermal control, biological control</li> <li>4. Specific weed problems – dangerous weed species</li> <li>5. Specific weed problems – different types of crops</li> <li>6. Overview</li> </ol> <p>The obtained knowledge helps to survey and evaluate present and future weed problems of a farm. With the elementary knowledge of theoretical background and technologies, one is able to plan, establish and maintain complex weed management systems.</p> |                           |     |
| <b>Lecturer</b>                       | Izóra Gál  |                           |     |
| <b>Semester</b>                       | Fall, Spring   | <b>Contact hours/week</b> | 0+2 |
| <b>Level</b>                          | BSc, MSc   | <b>ECTS</b>               | 2   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       |  |                           |     |
| <b>Assessment:</b>                    | Written  |                           |     |

|                      |  |  |  |
|----------------------|--|--|--|
| <b>Title</b>         | Organic farming  |  |  |
| <b>Code</b>          | 3OG55NAK06B  |  |  |
| <b>Prerequisites</b> | -  |  |  |
| <b>Description</b>   | <p>The aim of the course is to be familiar with the description, the principles, and the regulation of organic farming and with the system of controlling, qualifying and certifying. 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. Topics of the semester: Introduction to organic farming<br/>Regulation control and certification of organic products<br/>Field Crop production<br/>Organic Seed production<br/>Plant protection in organic farming<br/>Food quality of organic products<br/>Soil management and nutrition<br/>Vegetables, Herbs and medicinal plants in organic farming</p> |  |  |



|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
|                                       | Conversion to organic<br>Fruit production, Viticulture - Agroforestry<br>Animal Husbandry<br>Weed Management<br>During the semester students present country profiles of organic farming where they came from.   |                           |     |
| <b>Lecturer</b>                       | Dr. Zita Szalai, Péter Pusztai, Dr. Anna Divéky-Ertsey, Izóra Gál, Krisztina Madaras   |                           |     |
| <b>Semester</b>                       | Fall   | <b>Contact hours/week</b> | 0+3 |
| <b>Level</b>                          | BSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       | Compulsory readings:<br>B. Sarapatka, J Urban(2009):Organic Agriculture Prague, ISBN 978-80-86671-60-7<br>N. Lampkin (1992) Organic farming, Farming Press (UK) ISBN 0-83236-191-<br>Recommended readings:<br>Altieri M: Agroecology (1989) Cambridge University press<br>Mollison B. Introduction to permaculture (1991) Tagari kiadó Ausztrália<br>Whitefield P: How to make a forest garden Permanent publications 1996 |                           |     |
| <b>Assessment:</b>                    | written/oral exam  |                           |     |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Organic farming  |                           |     |
| <b>Code</b>                           | 3OG55NAK06B  |                           |     |
| <b>Prerequisites</b>                  | -  |                           |     |
| <b>Description</b>                    | 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. |                           |     |
| <b>Lecturer</b>                       | Izóra Gál, Dr. Zita Szalai, Péter Pusztai, Dr. Anna Divéky-Ertsey, Krisztina Madaras   |                           |     |
| <b>Semester</b>                       | Fall   | <b>Contact hours/week</b> | 0+3 |
| <b>Level</b>                          | BSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       | <b>Compulsory readings:</b><br>Lampkin N (1992): Organic Farming. Farming Press Books, Ipswich, UK<br><b>Recommended readings:</b><br>Mollison B: Permaculture manual handbook 2001 Tagari kiadó Ausztrália<br>Mollison B. Introduction to permaculture (1991) Tagari kiadó Ausztrália<br>Altieri M: Agroecology (1989) Cambridge University press<br>Whitfield P: How to make a forest garden Permanent publications 1996   |                           |     |
| <b>Assessment:</b>                    | 2 written/oral exam  |                           |     |

|                      |   |  |  |
|----------------------|---|--|--|
| <b>Title</b>         | Organic Seed Production   |  |  |
| <b>Code</b>          | 3OG55NAK80M   |  |  |
| <b>Prerequisites</b> |   |  |  |
| <b>Description</b>   | The course will give general information, regarding variety and propagation material use in organic farming. Organic seed production methods of important vegetables and field crops will be presented. Students achieve methods of seed processing of horticultural and agricultural seeds.<br>The students fulfilling the course requirements will be able to |  |  |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
|                                       | - get acquainted with the organic seed production systems of most produced crops<br>- get acquainted with the regulation of seed production and organic farming<br>- to comment critically on technologies and aims in organic seed production technology |                           |     |
| <b>Lecturer</b>                       | Anna Divéky-Ertsey, László Csambalik  |                           |     |
| <b>Semester</b>                       | Fall, Spring  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | <b>Bibliography:</b><br>Recommended readings:<br>Navazio J. (2012): The organic seed grower. Chelsea Green Publishing. White River Junction, Vermont (ISBN 978-1-933392-77-6)   |                           |     |
| <b>Assessment:</b>                    | Written and oral exam   |                           |     |

|                                       |  |                           |                              |
|---------------------------------------|--|---------------------------|------------------------------|
| <b>Title</b>                          | Outdoor Cultivation of Ornamental Plants   |                           |                              |
| <b>Code</b>                           | 3DD02NAK01B  |                           |                              |
| <b>Prerequisites</b>                  | -  |                           |                              |
| <b>Description</b>                    | The aim of course is to provides knowledge about morphological and physiological specialities, ecological requirements and growing of open ground woody ornamentals and perennials.  |                           |                              |
| <b>Lecturer</b>                       | Assist. Prof. Dr. Magdolna Sütöri-Diószegi, Assist. Prof. Dr. Máté Ördögh, Assist. Prof. Dr. Ildikó Kohut, Assist. Prof. Dr. Veronika Szabó  |                           |                              |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 2+2 (+4 days field practice) |
| <b>Level</b>                          | BSc  | <b>ECTS</b>               | 4                            |
| <b>Teaching and Learning Methods:</b> | Lectures, practices and field practices.<br>- taking part on the practices is obligatory<br>- taking part on the study visits and field exercises<br>- plant identification reports (Evergreens, Deciduous ornamental trees and shrubs; Perennials<br>Written and oral examination in the examination period.  |                           |                              |
| <b>Reading:</b>                       | PPT files of lectures (see website of the department)<br>Dirr, M. A (1998): Manual of Woody Landscape Plants. Stipes Publ. Company, Champaign, Illinois, USA.<br>Hoffman, M. H. A. (2005): List of Names of Woody Plants. International standard ENA 2005-2010, Applied Plant Research. Boskoop, the Netherlands.<br>Krüssmann, G. (1985): Manual of Cultivated Conifers. Timber Press, Portland, Or., USA.<br>Krüssmann, G. (1989): Manual of Cultivated Broad-leaved Trees and Shrubs. Timber Press, Portland, Or., USA.<br>Krüssmann, G. (1990): Manual of Woody Landscape Plants. Stipes Publ. Company, USA.<br>MACDONALD, B. (1989): Practical Woody Plant Propagation for Nursery Growers. B. Y. Batsford Ltd., London<br>Schmidt G. 2006: Woody ornamentals (CD ROM with 3000 photos. Text in Hungarian!)<br>Hámori Z. Schmidt G. Ornamentals from A to Z (CD ROM with 1400 photos. Text in Hungarian!) |                           |                              |
| <b>Assessment:</b>                    | obtaining signature + exam   |                           |                              |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Permaculture and other trends of organic farming   |                           |     |
| <b>Code</b>                           | 3OG55NCS74B  |                           |     |
| <b>Prerequisites</b>                  | -  |                           |     |
| <b>Description</b>                    | The aim of the course is to make familiar students with principles and development of organic farming, and the most important trends, and movements. The students will be familiar with permaculture, biodynamic farming, agroforestry systems, Fukuoka systems, Bio-Organic farming. Movies will help to learn more about the practical value of the different trends of organic farming. Applying the theoretical knowledge of the course students have the possibility to design farm or garden according to one of the most well known trends of organic farming, like permaculture.   |                           |     |
| <b>Lecturer</b>                       | Dr. Zita Szalai, Dr. Péter Pusztai, Dr. Izóra Gál  |                           |     |
| <b>Semester</b>                       | Fall+Spring  | <b>Contact hours/week</b> | 0+2 |
| <b>Level</b>                          | BSc/MSc  | <b>ECTS</b>               | 2   |
| <b>Teaching and Learning Methods:</b> | Desing work of farm or garden  |                           |     |
| <b>Reading:</b>                       | <p>Compulsory readings:</p> <p>B. Sarapatka, J Urban (2009): Organic Agriculture Prague, ISBN 978-80-86671-60-7<br/> N. Lampkin (1992) Organic farming, Farming Press (UK) ISBN 0-83236-191-2<br/> Hemenway T.:(2016): Gaia kertje Katalizátor könyvkiadó Budapest ISBN 978-615-80146-0</p> <p>Recommended readings:</p> <p>Mollison B: Permaculture manual handbook 2001 Tagari kiadó Ausztrália<br/> Mollison B. Introduction to permaculture (1991) Tagari kiadó Ausztrália<br/> Altieri M: Agroecology (1989) Cambridge University press<br/> Whitfiled P: How to make a forest garden Permanent publications 1996<br/> Baji B: Permakultúrás kertgazdálkodás 2015 Első Lánchíd Bt<br/> Franck G.(1992): Öngyógyító kiskert. Budapest Mezőgazda Kiadó, ISBN: 9632345479<br/> Franke W. (2005): Biokert - Az öngyógyító vegyeskert. Budapest Mezőgazda Kiadó, ISBN: 9789632862286<br/> Pace, A., Cullis, A. (2001): Rainwater harvesting. Intermediate technology publications. London. UK, 1986<br/> Wackanagel M., Rees W. Ökológiai lábnyomunk. Föld Napja Alapítvány. ISBN 9630074303</p> |                           |     |
| <b>Assessment:</b>                    | Written exam   |                           |     |

|                      |   |
|----------------------|---|
| <b>Title</b>         | Physiology of temperate zone fruit plants   |
| <b>Code</b>          | 3GY15NBV25M   |
| <b>Prerequisites</b> |   |
| <b>Description</b>   | The subject deals with the field of applied physiology for fruit growing. Basic knowledge of subject can be divided into two parts vegetative and generative traits |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
|                                       | and phenological processes of temperate zone fruit species. Stress physiology is an important part of learning programme as well.   |                           |     |
| <b>Lecturer</b>                       | Dr. Szalay László   |                           |     |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/>Faust, M. Physiology of temperate zone fruit trees, John Wiley and Sons, New York. 1989.</p> <p><b>Recommended literature:</b><br/>Ryugo, K. Fruit culture: Its science and art. Wiley. Davis, California, USA. 1988.<br/>Westwood, M.N. (ed.) Temperate zone pomology. Timber Press. Portland, Oregon, USA. 1993.<br/>Tromp, J., Webster, A.D., Wertheim, S.J. (eds.) Fundamentals of Temperate Zone Tree Fruit Production. Backhuys Publishers, Leiden, The Netherlands. 2005.</p> |                           |     |
| <b>Assessment:</b>                    | exam  |                           |     |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Plant Pathology  |                           |     |
| <b>Code</b>                           | 3NK06NAK02B  |                           |     |
| <b>Prerequisites</b>                  | -  |                           |     |
| <b>Description</b>                    | 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. |                           |     |
| <b>Lecturer</b>                       | Prof. Dr. László Palkovics, Dr. Marietta Petróczy, Dr. János Ádám, Dr. Erzsébet Szathmáry  |                           |     |
| <b>Semester</b>                       | 5 <sup>th</sup> Fall   | <b>Contact hours/week</b> | 2+2 |
| <b>Level</b>                          | BSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       | <b>Recommended readings:</b> Agrios GN (ed.): Plant Pathology (4th ed.), Academic Press, San Diego California, 1997.   |                           |     |
| <b>Assessment:</b>                    | 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   |                           |     |

|                      |  |  |  |
|----------------------|--|--|--|
| <b>Title</b>         | Plant physiology and Stress Biology  |  |  |
| <b>Code</b>          | 3MN24NAK38M  |  |  |
| <b>Prerequisites</b> | Plant Biochemistry and Plant Physiology  |  |  |
| <b>Description</b>   | The interactions of plant and its abiotic environment are highlighted by treating the following subject areas: General overview of interactions between plants and their abiotic environment. Water and mineral nutrient transport in the changing environment. Sensing of internal and external signals, transduction pathways and networks, role of plant hormones. Non-photosynthetic effects of light, consequences of extreme temperature and salt exposure. Levels and types of adjustments to external conditions, tolerance strategies. Molecular background and regulation of circadian and photoperiodic rhythms. Description of processes leading to flowering, seed and fruit development in the molecular level in the light of external and internal regulators. |  |  |

|                 |   |                           |     |
|-----------------|---|---------------------------|-----|
| <b>Lecturer</b> | Dr. István Papp DSc, Kissné Dr. Erzsébet Bába PhD, Dr. Anita Szegő PhD, Dr. Iman Mirmazloum PhD |                           |     |
| <b>Semester</b> | Fall  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>    | MSc   | <b>ECTS</b>               | 3   |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Plant Virology   |                           |     |
| <b>Code</b>                           | INTKT NK001  |                           |     |
| <b>Prerequisites</b>                  |  |                           |     |
| <b>Description</b>                    | For more than a century, plant viruses are known to reduce the yield and quality of different crops. At present, approximately thousand different plant virus species have been described. The offered course will mediate a detailed overview about the present knowledge of conventional and molecular aspects of plant virology. The lecture starts with the history of plant virology, discovery of viruses, principles of the architecture of their particles and genome organisation, imparting the knowledge, how the viral genome replicates, moves in the plant, thereby interacting with the host genome and spreads from host to host with the help of different vector organisms. This is followed by lectures on virus-like agents such as viroids and satellites, virus detection and control. Possible protection strategies will be discussed as well as topics of molecular virology. |                           |     |
| <b>Lecturer</b>                       | Dr. László Palkovics   |                           |     |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 4+0 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 5   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       | Bibliography:<br>- Roger Hull (2002): Matthew's Plant Virology, Academic Press, London, UK (ISBN: 0-12-361160-1)<br>- D.D. Šutić, R.E. Ford, M. T. Tošić (1999): Handbook of Plant Virus Diseases, CRC Press LLC Florida (ISBN: 0-8493-2302-9)   |                           |     |
| <b>Assessment:</b>                    | Oral exam  |                           |     |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Post Harvest Physiology and Technologies of Fruit Species   |                           |     |
| <b>Code</b>                           | INTKT GY002   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | The aim of this course is to provide the theoretical and practical training for horticultural students in the post-harvest physiology and technology of fruit species. The main topics of the course: Maturity types of fruit species; Fruit handling after harvest; Grading, packing and marketing (selling) of fruits; Cold storage conditions of different fruit species; The storage potential; The storage deficit and its reasons; Storage disorders of fruits; The modern storage technologies of pome, stone and small fruits. One day field trip and practical training. |                           |     |
| <b>Lecturer</b>                       | Dr. Gergely Simon; Dávid Papp   |                           |     |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 2+2 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 5   |
| <b>Teaching and Learning Methods:</b> | Lectures and individual presentations, professional trip and essays   |                           |     |
| <b>Reading:</b>                       | Compulsory reading:<br><a href="http://postharvest.ucdavis.edu/bookstore/Postharvest_Technology_of_Horticultural_Crops/">http://postharvest.ucdavis.edu/bookstore/Postharvest_Technology_of_Horticultural_Crops/</a>  |                           |     |
| <b>Assessment:</b>                    |   |                           |     |

|              |                        |  |  |
|--------------|------------------------|--|--|
| <b>Title</b> | Practical ampelography |  |  |
| <b>Code</b>  | 3SZ22NCS64B            |  |  |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Prerequisites</b>                  |  |                           |     |
| <b>Description</b>                    | There are more than 10.000 grape species, grapevine cultivars and clones in the world. The identification of these accessions is based on morphological, chemical, phenological and molecular properties. During the course we introduce the history of ampelography and the different methods of identification. Practical excersises help the students to understand classical ampelographic methods and ampelometry (foliometry, carpometry, florimetry, uvometry). |                           |     |
| <b>Lecturer</b>                       | Dr. Bodor-Pesti Péter Dr. Zsuzsanna Varga, Dr. Tamás Deák  |                           |     |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 0+2 |
| <b>Level</b>                          | BSc, MSc   | <b>ECTS</b>               | 2   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       | Bisztray, Gy.D., Bodor, P. (2015): Wine terroirs and grape cultivars in Hungary. Budapest. 87.   |                           |     |
| <b>Assessment:</b>                    | Written exam   |                           |     |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Principles of Wine Technology   |                           |     |
| <b>Code</b>                           | ETBT901 C   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | <ol style="list-style-type: none"> <li>1. Wine production of the world and Hungary. Classification of wines.</li> <li>2. History and basic terms of viticulture. Characteristics of the grapevine.</li> <li>3. Chemical composition of the grape juice</li> <li>4. Microbiota of the grape, grape juice and wine.</li> <li>5. Processing of white and red grapes</li> <li>6. Alcoholic fermentation</li> <li>7. Malolactic fermentation</li> <li>8. Aging and stabilization of wines. Bottling.</li> <li>9. Spoilage of wine</li> <li>10. Rules and methods of sensory evaluation. Describing wines</li> <li>11. Distinctive wine types (carbonated wines, botrytized wines, dessert wines)</li> <li>12. Health aspects of wine consumption</li> <li>13. Wine and gastronomy</li> </ol> |                           |     |
| <b>Lecturer</b>                       | Annamária Sólyom-Leskó  |                           |     |
| <b>Semester</b>                       | Fall  | <b>Contact hours/week</b> | 2+0 |
| <b>Level</b>                          | BSc, MSc  | <b>ECTS</b>               | 2   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | Ildikó Magyar: Microbiological aspects of winemaking. Textbook. Corvinus University of Budapest, 2006<br>Ronald Jackson: Wine science. Academic Press, 2004   |                           |     |
| <b>Assessment:</b>                    | Written exam  |                           |     |

|                      |   |  |  |
|----------------------|---|--|--|
| <b>Title</b>         | Production ecosystems and forms of their regulation   |  |  |
| <b>Code</b>          | 3ME13NAK08M   |  |  |
| <b>Prerequisites</b> |   |  |  |
| <b>Description</b>   | Role of producent organisms in biomass production. Natural systems of biomass production (collection from the wild habitats) and artificial systems (cultivation in agrarian systems). Principles of their functioning, similarities and differences in energy flow. Quasi-natural systems. Role of different factors influencing the biomass production and its efficacy. Physical and biological (plant, animal, human) effects and interactions. Methods and possibilities of regulating production ecosystems under different circumstances (open field, covered surfaces). |  |  |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Lecturer</b>                       | Dr. Jenő Bernáth, Dr. Krisztina Szabó PhD, dr. Zsuzsanna Pluhár, PhD, dr. Péter Radácsi, PhD   |                           |     |
| <b>Semester</b>                       | Fall   | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/>The course material is provided for the students by the lecturers in electronic format.</p> <p><b>Recommended literature:</b><br/>Hopkins, W. G., Hünter, N. P. (2003): Introduction to plant physiology (3rd ed). Ontario. John Wiley and Sons. ISBN: 9780471389156<br/>- Lange, O.L., Nobel, P.S., Osmond, C.B., Ziegler, H. (1983): Physiological plant ecology IV. Berlin. Springer Berlin Heidelberg. ISBN: 978-3-642-68158-5<br/>- Wink, M. (1999): Functions of plant secondary metabolites and Their Exploitation in Biotechnology. Blackwell Publisher. ISBN 9780849340864</p> |                           |     |
| <b>Assessment:</b>                    | Exam<br>Elaborating a study of 3-4 pages on the chosen topic connected to the course profile   |                           |     |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Production of propagation material of vegetables  |                           |     |
| <b>Code</b>                           | 3ZT14NBV43M   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | During the course the students learn the Hungarian and international rules and regulations of the seed production industry. They are introduced to the most significant players and companies of the sector. The students learn about seed quality control; treatments and packaging.   |                           |     |
| <b>Lecturer</b>                       | Dr. Gábor Balázs, Dr. Anna Szabó, Dr. Zoltán Pap, Dr. András Geösel, Dr. Anna Divéky-Ertsey   |                           |     |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/>1. Rubatzky, V. E., Yamaguchi, M. (1997): World Vegetables. 2nd ITP. New York. Albany. ISBN: 9781461560159</p> <p><b>Recommended literature:</b><br/>1. Raymond, A. T. George (2009): Vegetable seed production, CABI.<br/>2. Raymond, A.T. George (2011): Agricultural seed production, CABI.</p> |                           |     |
| <b>Assessment:</b>                    | exam  |                           |     |

|                      |   |  |  |
|----------------------|---|--|--|
| <b>Title</b>         | Propagation biology of plants   |  |  |
| <b>Code</b>          | 3DD02NAK10M   |  |  |
| <b>Prerequisites</b> | -   |  |  |
| <b>Description</b>   | The course provides general training in key areas of propagation in horticulture. Main topics: seed biology, germination, vegetative propagation, adventitious root formations, rooting of cuttings, modified stems, grafting, rootstock scion interactions, rootstock usage. |  |  |
| <b>Lecturer</b>      | Assist. Prof. Dr. Veronika Szabó, Assoc. Prof. Dr. Andrea Tilly-Mándy, Assist. Prof. Dr. István Mosonyi, ret. Prof. Dr. Károly Hrotkó   |  |  |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Semester</b>                       | 2nd, spring  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | Lectures, practices and field practices. Essay homework and presentation. Based on results of test, homework essay and presentation notes are offered. Students not satisfied with offered notes have to make oral exam.   |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/> Hartmann, H.T., Kester, D. E., Davies, F.T. és Geneve, R.L: 2011 Plant propagation, 8th edition, Prentice-Hall Inc. USA, ISBN 978-0-13-501449-3. (selected chapters)<br/> Hrotkó, K. 2017. Plant Propagation Biology. PPT Presentations for lectures. Department of Floriculture and Denmdrology</p> <p><b>Redommended literature:</b><br/> Copeland, L.O. and McDonald, M.B. 2001. Principles of seed Science and Technology. Macmillan Publishing Company. New York. ISBN 978-1-4615-1619-4<br/> Benech-Arnold, R. L. and Sánchez, R. A. 2004. Handbook of Seed Physiology. Haworth Press. ISBN 1-56022-928-4.</p> |                           |     |
| <b>Assessment:</b>                    | obtaining signature + exam   |                           |     |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Quality oriented viticulture, production-development   |                           |     |
| <b>Code</b>                           | 3SZ22NBV18M  |                           |     |
| <b>Prerequisites</b>                  |  |                           |     |
| <b>Description</b>                    | Aim of the course is to analyze the possibilities of quality enhancement, sustainability and production development in different vineyards and farms through Hungarian and international examples. Special notice is given to the possibilities of automation and modernization. The theory and practice concerning quality, and its assurance during production development in viticulture is also discussed. |                           |     |
| <b>Lecturer</b>                       | Bisztray György Dénes PhD, Zsuzsanna Varga PhD   |                           |     |
| <b>Semester</b>                       | Spring   | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/> Keller, M. (2015): The Science of Grapevines (2nd Edition). Academic Press.</p> <p><b>Recommended literature:</b><br/> Geros, H., Chaves, M.M., Medrano, H., Delrot, S (2016): Grapevine in a changing environment. Wiley Blackwell. pp. 400. ISBN: 978-1-118-73605-0.</p>   |                           |     |
| <b>Assessment:</b>                    | exam   |                           |     |

|                      |  |  |  |
|----------------------|--|--|--|
| <b>Title</b>         | Renewable energy sources   |  |  |
| <b>Code</b>          | 3MT17NCS42B  |  |  |
| <b>Prerequisites</b> |  |  |  |
| <b>Description</b>   | <ul style="list-style-type: none"> <li>- Technical Background of Renewable Energies</li> <li>- Renewable Energy potentials</li> <li>- Solar energy <ul style="list-style-type: none"> <li>- Solar energy estimations</li> <li>- Solar thermal utilizations – solar collector systems</li> <li>- Photovoltaic utilizations – PV systems</li> <li>- Concentrate solar power plants</li> </ul> </li> <li>- Wind energy – horizontal, vertical, airborne systems</li> <li>- Water energy</li> <li>- Geothermal energy <ul style="list-style-type: none"> <li>- EGS systems</li> <li>- Ground heat systems – heat pump</li> </ul> </li> </ul> |  |  |



|                                       |   |                           |   |
|---------------------------------------|---|---------------------------|---|
|                                       | <ul style="list-style-type: none"> <li>- Biomass <ul style="list-style-type: none"> <li>- Solid biomass utilizations</li> <li>- Liquid biomass utilizations (bioethanol, biodiesel)</li> <li>- Gas biomass utilizations (biogas technology, biohydrogen)</li> </ul> </li> <li>- Renewable energy storage</li> </ul> <p>Practice:</p> <ul style="list-style-type: none"> <li>- Solar collector system efficiency, system sizing</li> <li>- PV systems design, efficiency</li> </ul> <p>Return on investment - calculations</p> |                           |   |
| <b>Lecturer</b>                       | Zsófia Varga  |                           |   |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 2 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 2 |
| <b>Teaching and Learning Methods:</b> |   |                           |   |
| <b>Reading:</b>                       | <u>Required reading material: e-learning course page downloadable PDFs (www.elearning.szie.hu)</u>  |                           |   |
| <b>Assessment:</b>                    | Oral exam   |                           |   |

|                                       |  |                           |  |
|---------------------------------------|--|---------------------------|--|
| <b>Title</b>                          | Research Activity for the Thesis   |                           |  |
| <b>Code</b>                           | 3ME13NBK28S  |                           |  |
| <b>Prerequisites</b>                  | It is offered only for the Erasmus student who has two supervisor (one from the home and one from the host university-Double degree) |                           |  |
| <b>Description</b>                    |  |                           |  |
| <b>Lecturer</b>                       |  |                           |  |
| <b>Semester</b>                       |  | <b>Contact hours/week</b> |  |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               |  |
| <b>Teaching and Learning Methods:</b> |  |                           |  |
| <b>Reading:</b>                       |  |                           |  |
| <b>Assessment:</b>                    |  |                           |  |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Soil Ecology   |                           |     |
| <b>Code</b>                           | 3KT23NAK30M  |                           |     |
| <b>Prerequisites</b>                  | Basic knowledge of soil science and/or Microbiology  |                           |     |
| <b>Description</b>                    | <p>What are the role of soils? How the soil is functioning? What about the fertility? What are the criteria of soil (human) health? Biotic and abiotic environmental stress factors. Soilbiological physics, soil chemistry, soil biology. Soil food web. Role of soil in our life.Importance of fertile soil. Soil degrading processes and how to treat (ameliorate, remediate)them. The soil life science.</p> |                           |     |
| <b>Lecturer</b>                       | Dr. Borbála Biró   |                           |     |
| <b>Semester</b>                       | Fall, Spring   | <b>Contact hours/week</b> | 3+0 |
| <b>Level</b>                          | BSc, MSc, PhD  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | Lectures will be presented by the tutors. Topics will be elected from the preliminary list by the students home-made studies will be prepared.   |                           |     |
| <b>Reading:</b>                       | David C. Coleman, D.A. Crossley, Paul F. Hendrix (2004): Fundamentals of Soil Ecology, Institute of Ecology, Univ. Georgia, Athens, Georgia.   |                           |     |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Assessment:</b>                    | Evaluation and marking of semester will be done on the basis of written tests and the value of home-made study by the students. If the summarised result reach at least the overall value of 71%, a final mark of 4 or 5 will be offered. |                           |     |
| <b>Title</b>                          | Soil Science for Ornamentalists   |                           |     |
| <b>Code</b>                           | 3KT23NAK18M   |                           |     |
| <b>Prerequisites</b>                  | Basic knowledge of soil and plant sciences.   |                           |     |
| <b>Description</b>                    |   |                           |     |
| <b>Lecturer</b>                       | Prof. Dr. Borbala BIRO, DSc, Dr. Zsolt Kotroczó, PhD., Tamas Kocsis, Msc,   |                           |     |
| <b>Semester</b>                       |   | <b>Contact hours/week</b> | 3+0 |
| <b>Level</b>                          | BSc, MSc, PhD   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | Lectures will be presented by the tutors.<br>Topics will be also selected by the students from a preliminary list and home-made studies will be prepared.   |                           |     |
| <b>Reading:</b>                       | Hargitai L, Nagy B. (1971): Soils and substrates of ornamentals. Mezőgazdasági Kiadó (in Hungarian).  |                           |     |
| <b>Assessment:</b>                    | Evaluation and marking of semester will be done on the basis of written tests and the value of home-made study by the students. If the summarised result reach at least the overall value of 71%, a final mark of 4 or 5 will be offered. |                           |     |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
| <b>Title</b>                          | Special technical knowledge  |                           |     |
| <b>Code</b>                           | 3MT17NAK18M  |                           |     |
| <b>Prerequisites</b>                  | Basic technical knowledge, Machines in hortic. production  |                           |     |
| <b>Description</b>                    | Among the technological elements of the horticultural technologies the subject deals with the mechanization of plantation, fertilization, irrigation, plant protection, harvesting, preprocessing, remote-sensing and precision farming. Besides explaining the function of machines and equipments, their mechanical, hydrodynamic and thermal basics are also discussed. This knowledge finally leads to reasonable machine selection for a given task. The results of latest technical developments are introduced and explained via concrete machines and equipments.  |                           |     |
| <b>Lecturer</b>                       | Dr. András Jung  |                           |     |
| <b>Semester</b>                       | Fall   | <b>Contact hours/week</b> | 1+2 |
| <b>Level</b>                          | MSc  | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/> Hegybíró M. Kurtán S., Láng Z., Nagy S., Wieser A. <b>2013</b>: Special Technical Knowledge in Horticulture. In: Éva Németh Zámoriné, Szilvia Sárosi, Levente Horváth : Modern Horticulture. Corvinus University of Budapest, Faculty of Horticultural Science, 2013. (ISBN: 978-963-503-552-6)</p> <p><b>Recommended literature:</b><br/> - CIGR (2004): Handbook of Agricultural Engineering – Volume III. Plant Production Engineering. Published by ASAE (American Society of Agricultural Engineers) ISBN 1-892769-02-6<br/> - Witney, B.: Choosing and using Farm Machines. Land Technology Ltd., Edinburgh, Scotland, 1996. ISBN 0582456002</p> |                           |     |
| <b>Assessment:</b>                    | <ul style="list-style-type: none"> <li>• exam</li> <li>• PP presentation of a chosen topic</li> </ul>  |                           |     |

|              |  |
|--------------|--|
| <b>Title</b> | Statistical methods of decision support systems in extension service |
|--------------|--|

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Code</b>                           | 3MI09NAK43M   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | The aim of the course is to provide practice-oriented knowledge - based on previously acquired IT basic knowledge - on information systems and complex tasks and new IT processes (data processing and dynamic data presentation, relational database management, statistical evaluation methods), which provide a broad basis for solving informatical and analytical tasks related to decision support.   |                           |     |
| <b>Lecturer</b>                       | Dr. Márta Ladányi, Anna László assistant lecturer   |                           |     |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 1+2 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | test, homework project with practical problem solving   |                           |     |
| <b>Reading:</b>                       | <b>Recommended literature:</b><br>- Joyce J. Nielsen (2016) Microsoft Official Academic Course, MICROSOFT EXCEL 2016. Wiley. ISBN: 978-1-11-927299-1<br><a href="https://dit.ie/media/ittraining/msoffice/MOAC_Excel_2016_Core.pdf">https://dit.ie/media/ittraining/msoffice/MOAC_Excel_2016_Core.pdf</a><br>- Mary Lemons (2016): Microsoft Official Academic Course, MICROSOFT ACCESS 2016. Wiley. ISBN: 978-1-11-927443-8<br><a href="https://dit.ie/media/ittraining/msoffice/MOAC_Access_2016.pdf">https://dit.ie/media/ittraining/msoffice/MOAC_Access_2016.pdf</a><br>- Andy Field, Jeremy Miles, Zoë Field (2012): Discovering statistics using R. SAGE Publications. ISBN 978-1-4462-0045-2, ISBN 978-1-4462-0046-9<br><a href="https://freethegeogbooks.files.wordpress.com/2016/08/book-for-r-language-stats.pdf">https://freethegeogbooks.files.wordpress.com/2016/08/book-for-r-language-stats.pdf</a> |                           |     |
| <b>Assessment:</b>                    | exam  |                           |     |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Sustainable Crop Production   |                           |     |
| <b>Code</b>                           | 3OG55NAK81M   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | The aim of the course is to get knowledge about the definition of sustainability, elements of sustainable farming systems, with focus on important crops, and how they are produced in terms to achieve and maintain sustainable and environmentally friendly crop production on a global scale.<br>The students fulfilling the course requirements will be able to<br>- get acquainted with the production of crops with focus on sustainable farming systems,<br>- get acquainted with the definition of sustainability in farm level and in larger scale |                           |     |
| <b>Lecturer</b>                       | Anna Divéky-Ertsey, László Csambalik  |                           |     |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 2+2 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 4   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | Compulsory readings: Mason, J. (2003): Sustainable Agriculture (2. Edition) – Landlinks Press PO Box 1139 Collingwood Vic. 3066 Australia, 205 p<br>Recommended readings:<br>Briggs S. (2008): Organic Cereals and Pulse Production. A complete guide. The Crowood Press. Ramsbury. 432 p.  |                           |     |
| <b>Assessment:</b>                    | Written and oral exam   |                           |     |

|                      |                                     |  |  |
|----------------------|-------------------------------------|--|--|
| <b>Title</b>         | Up-to date methods in fruit growing |  |  |
| <b>Code</b>          | 3GY15NBV26M                         |  |  |
| <b>Prerequisites</b> |                                     |  |  |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Description</b>                    | Students learn about the morphological and physiological traits of temperate zone fruit species connected with the modern orchard management. The subject deals with the growing systems of modern orchards, the standard and special elements of up-to date growing technology and the innovations in this field.  |                           |     |
| <b>Lecturer</b>                       | Dr. Szalay László, Dr. Simon Gergely, Papp Dávid  |                           |     |
| <b>Semester</b>                       | Spring  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> |   |                           |     |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b><br/> Reiger, M. 2005. Introduction to fruit crops. Haworth Press. New York<br/> Tromp, J., Webster, A.D., Wertheim, S.J. 2005. Fundamentals of temperate zone tree fruit production. Backhuys Publishers, Leiden</p> <p><b>Recommended literature:</b><br/> Ryugo, K. 1988. Fruit culture: Its science and art. Jon Wiley and Sons. New York<br/> Jackson, D.I., Looney, N.E. 1999. Temperate and subtropical fruit production. CABI Publishers. Wallingford UK<br/> Westwood, M.N. 1993. Temperate-zone pomology. Timber Press. Portland, USA</p> |                           |     |
| <b>Assessment:</b>                    | exam  |                           |     |

|                                       |   |                           |     |
|---------------------------------------|---|---------------------------|-----|
| <b>Title</b>                          | Up-to date technologies of medicinal plant production   |                           |     |
| <b>Code</b>                           | 3ME13NAK37M   |                           |     |
| <b>Prerequisites</b>                  |   |                           |     |
| <b>Description</b>                    | <p>The course schedule involves essential knowledge concerning the whole process line of sustainable medicinal crop producing systems. The main elements of cultivation including agrotechnology and crop processing are demonstrated with respect to the biological, ecological, agrotechnical background and regulations applied in the sector. Detailed information is presented regarding the most important medicinal and aromatic plant crops of the world with their significance in national and international level. Theoretical part of the course consist of the following topics: variety use, propagation technologies, legal regulations, optimization of the crop to the growing area, specific soil tillage, irrigation and nutrient supply applied in herb fields, harvesting and processing technologies, respectively. We focus on the modern methods and equipments of plant protection and weed control in integrated cropping systems as well as in organic farming, demonstrating the most important pests and diseases appearing in medicinal plant cultures. Medicinal plant based crop enhancing agents are also evaluated. Up-to-date technologies and machines of medicinal plant harvest are essential part of the knowlegde provided by the course, optimized to specific developmental phases of herbs. Primary and secondary processing technologies and quality assurance systems are also demonstrated. Individual project work and its presentation are part of the program as well.</p> |                           |     |
| <b>Lecturer</b>                       | Dr. Zámoriné Németh Éva, egyetemi tanár DSc<br>Dr. Pluhár Zsuzsanna, egyetemi docens PhD habil<br>Dr. Gosztola Beáta, adjunktus PhD<br>Dr. Tavaszi-Sárosi, Szilvia adjunktus PhD<br>Dr. Radácsi Péter, adjunktus PhD  |                           |     |
| <b>Semester</b>                       | Fall  | <b>Contact hours/week</b> | 2+1 |
| <b>Level</b>                          | MSc   | <b>ECTS</b>               | 3   |
| <b>Teaching and Learning Methods:</b> | Presentation of an individual project work  |                           |     |
| <b>Reading:</b>                       | <b>Compulsory literature:</b>   |                           |     |

|                    |   |
|--------------------|---|
|                    | <p>-Zsuzsanna Pluhár (ed.): Up-to-date technologies of medicinal plant production In:Éva Németh Zámoriné, Szilvia Sárosi, Levente Horváth : Modern Horticulture. Corvinus University of Budapest, Faculty of Horticultural Science, 2013. (ISBN: 978-963-503-552-6): e-book (<a href="http://www.kertesztananyag.hu">www.kertesztananyag.hu</a>) or <a href="http://www.tankonyvtar.hu/hu/tartalom/tamop412A/2011-0028_up_to_date_technologies/up_to_date_technologies_of_medicinal_plant_production_1_1.html">http://www.tankonyvtar.hu/hu/tartalom/tamop412A/2011-0028_up_to_date_technologies/up_to_date_technologies_of_medicinal_plant_production_1_1.html</a></p> <p><b>Recommended literature:</b></p> <p>-Hoppe, B. (2012-13): Handbuch Arznei- und Gewürzpflanzenanbau, 4 és 5 kötet, Saluplanta e.V./GFS e.V., Bernburg</p> <p>-Hornok, L. (ed): Cultivation and processing of medicinal and aromatic plants. Academic Publisher, Budapest, 1991.</p> |
| <b>Assessment:</b> | exam  |

|                                       |   |                           |   |
|---------------------------------------|---|---------------------------|---|
| <b>Title</b>                          | Vegetable Production Technologies   |                           |   |
| <b>Code</b>                           |   |                           |   |
| <b>Prerequisites</b>                  | Principles of Vegetable Production  |                           |   |
| <b>Description</b>                    | 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 greenhouses. 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, plantcare (plant protection excluded), harvest and post-harvest handling.  |                           |   |
| <b>Lecturer</b>                       | Katalin Slezák PhD, Gábor Balázs PhD, András Geösel PhD, Noémi Kappel PhD, Zoltán Pap PhD, Anna Szabó PhD   |                           |   |
| <b>Semester</b>                       | Fall  | <b>Contact hours/week</b> |   |
| <b>Level</b>                          | BSc   | <b>ECTS</b>               | 4 |
| <b>Teaching and Learning Methods:</b> | project work: complex cultivation plan of given vegetable species   |                           |   |
| <b>Reading:</b>                       | <p><b>Compulsory literature:</b></p> <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.</p> <p>English summaries uploaded to the e-learning portal</p> <p><b>Recommended literature:</b></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> |                           |   |
| <b>Assessment</b>                     | exam  |                           |   |

|                      |  |
|----------------------|--|
| <b>Title</b>         | Wine Terroirs  |
| <b>Code</b>          | INTKT SZ002  |
| <b>Prerequisites</b> |  |
| <b>Description</b>   | The course introduce students on an entertaining tour of the world's most celebrated winegrowing regions to discover the characteristics of the bond that ties |

|                                       |  |                           |     |
|---------------------------------------|--|---------------------------|-----|
|                                       | <p>the vine to its place of birth: the terroir. Topics are: terroirs in France, Spain, Italy, California, Chile, Australia, and South Africa, Hungary.</p> <p>The course wants to show how environment and soil and climate contribute to the precise and individual character of each terroir, making the great winegrowing regions what they are today. Participants will hear about the relationship between international grape varieties and the soil in which they grow, and how these factors affect the taste of the wines.</p> <p>The students fulfilling the course requirements will be able to</p> <ul style="list-style-type: none"> <li>- Get knowledge in the history of viticulture</li> <li>- Describe wine growing areas</li> <li>- Obtain special knowledge of the viticulture and oenology of selected Old- and New World wine regions.</li> </ul> |                           |     |
| <b>Lecturer</b>                       | Dr. György Lukácsy, Dr. Zsuzsanna Varga  |                           |     |
| <b>Semester</b>                       | Fall, Spring   | <b>Contact hours/week</b> | 2+0 |
| <b>Level</b>                          | BSc, MSc   | <b>ECTS</b>               | 5   |
| <b>Teaching and Learning Methods:</b> |  |                           |     |
| <b>Reading:</b>                       | Compulsory readings:<br>Kikland, S. (1996): The Wines and Vines of Hungary. New World Publishing, INC., Budapest.  |                           |     |
| <b>Assessment:</b>                    | Written and oral exam  |                           |     |

|                                       |  |                           |  |
|---------------------------------------|--|---------------------------|--|
| <b>Title</b>                          | Woody Plant Nursery  |                           |  |
| <b>Code</b>                           | 3GY15NAK03B  |                           |  |
| <b>Prerequisites</b>                  | -  |                           |  |
| <b>Description</b>                    | 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.               |                           |  |
| <b>Lecturer</b>                       | Assist. Prof. Dr. Márta Gyevikí, Assist. Prof. Dr. Veronika Szabó, ret. Prof. Dr. Károly Hrotkó  |                           |  |
| <b>Semester</b>                       | Fall   | <b>Contact hours/week</b> | 2+1 (practices in 4 hour blocks) + 3 days field practice |
| <b>Level</b>                          | BSc  | <b>ECTS</b>               | 4  |
| <b>Teaching and Learning Methods:</b> | Lectures, practices and technical tours.<br>- participation in technical tours (2 times) is obligatory<br>- participation in practices is obligatory (4*4 hours in semester)<br>- achieved minimum level in seed recognition test<br>- achieved minimum level in test exam (60%)   |                           |  |
| <b>Reading:</b>                       | <p><b>Compulsory readings:</b><br/>PPT files of lectures (see website of the department)<br/>Stanley, J. and Toogood, A. 1981. The Modern Nurseryman. Faber and Faber, London<br/>Macdonald, B. 1989. Practical Woody Plant Propagation for Nursery Growers. B.T. Batsford Ltd. London</p> <p><b>Recommended readings:</b><br/>Krüssmann, G. 1996. Die Baumschule. Verlag Paul Parey, Berlin-Hamburg.<br/>Hartmann, H.T., Kester, D.E., Davies, F.T. and Geneve, R.L. 1997. Plant propagation. Prentice-Hall, Inc.</p> |                           |  |
| <b>Assessment:</b>                    | obtaining signature + exam   |                           |  |

