HUNGARIAN UNIVERSITY OF AGRICULTURE AND LIFE SCIENCES
INSTITUTE OF HORTICULTURAL SCIENCES

Address: 1118 Budapest, Villányi str. 29-43.

COURSE CATALOGUE for Exchange students

2026/27 Academic year

The **Institute of Horticultural Sciences of MATE at Buda Campus** is currently offering the following core courses for the 2026/27 academic year. **Additional courses will be announced before the start of the semester, providing a wider range of courses to choose from.**

Exchange students are integrated with full degree international students during the semesters' workflow in the following study programmes:

- **BSc in Horticultural Engineering**
- **MSc in Horticultural Engineering**

Exchange students can take both bachelor's and master's subjects regardless of their study level or semester; however, timetable conflicts may occur.

Available subjects (based on MATE curricula) are mostly part of full degree study programmes, as exchange students are integrated with full degree international students during the semesters' workflow. **Additional courses will be announced before the start of the semester**, providing a wider range of courses to choose from.

2026/27 Autumn semester

Lectures: from early September to mid December.
Exams: mid December to late January

2026/27 Spring semester

Lectures: from early February to mid May.

Exams: mid May to late June

2026/27 Autumn semester

BACHELOR PROGRAMME	SUBJECT CODE	SUBJECT NAME	ECTS Credits	*relevant semester of the study program at MATE*
Horticultural Engineering	KERTU041N	Evaulation of fruit cultivars	3	*3*
		Further subjects will be announced at the beginning of the semester based on the Curricula		*1, 3, 5*
MASTER PROGRAMME	**SUBJECT CODE**	**SUBJECT NAME**	**ECTS Credits**	*relevant semester of the study program at MATE*
Horticultural Engineering		***To be announced at the beginning of the semester based ont he Curricula***		*2, 4, 6*

2026/27 Spring semester

BACHELOR PROGRAMME	SUBJECT CODE	SUBJECT NAME	ECTS Credits	*relevant semester of the study program at MATE*
Horticultural Engineering	KERTU029N	Medicinal plants and spices	4	*4*
	KERTU043N	Fruit Production	4	*4*
	KERTU089N	Introduction to Vegetable Production	4	*4*
MASTER PROGRAMME	**SUBJECT CODE**	**SUBJECT NAME**	**ECTS Credits**	*relevant semester of the study program at MATE*
Horticultural Engineering	KERTU060N	Up-to-date technologies of medicinal plant production	3	*2*

Evaulation of fruit cultivars

Study Programme: Horticultural Engineering

SEMESTER: 2026/27/1

Relevant semester of the Study Programme at MATE: 3

SUBJECT CODE: KERTU041N

ECTS Credits: 3

AIM OF SUBJECT:
The subject is the most important fruit species and varieties of temperate zone fruit crops. Introduction of the methodology of modern variety evaluation and cultivar breeding. The topics include various gene sources, breeding trends, and the latest results of domestic and international breeding. Students will learn about the biological and technological basics of crossbreeding for proper pollination. They will have an impression of the currently dominant fruit varieties and the possibilities for renewing the fruit cultivar assortment.

CONTENT:
Introduction; Traditional and new apple cultivars; Pear cultivars; Apricot and peach cv. sortiment; Cherries and sour cherries; European and Asian plums; Cultivars of Nut-fruit species, Berry-fruit species (strawberry, raspberry, currants, blackberry; Laboratory practice – sensory evaluation; Students presentations and individual consultations.

GRADING SYSTEM:
Attendance at the lectures is recommended. The exam can be obtained by completing an individual essay assignment.

LITERATURE:

Lecture material on the e-learning platform. Additional English language course material in pdf format.

Medicinal plants and spices

Study Programme: Horticultural Engineering

SEMESTER: 2026/27/2

Relevant semester of the Study Programme at MATE: 4

SUBJECT CODE: KERTU029N

ECTS Credits: 4

AIM OF SUBJECT:
The main purpose of the course is to introduce the students into the general aspects of the medicinal plant production systems and to provide specific knowledge in the fields of wild-growing and exotic medicinal plants and spices. Beside the theoretical knowledge, practical skills are also demonstrated. The most important medicinal plant species, their drugs, active substances and application areas (phytotherapy, healing cosmetics, dietary supplements) are included as subjects of the lectures and practical parts of the course. Concerning the production systems of medicinal plants, students will get acquainted with general aspects of collection from wild habitats, cultivation, primary processing procedures, trade, quality control and quality assurrance systems (GAP, GMP, etc).

CONTENT:
Lectures (2 hours, on Tuesdays) 12.00-13.30 h; Practices (2 hours, on Tuesdays): 13.45-15.15 h

Classroom: Buda Campus, Buiding G, no. G8/ G2-208

1. Medicinal plant producing sytems and regions worldwide

2. History of curing, traditional and up-to-date therapeutic fields of application of medicinal plants

3. Definition of drug and product categories made of medicinal and aromatic plants

4. Active compunds of medicinal and aromatic plants and laboratory quality control

5. Aspects of medicinal plant collection from wild habitats

6. Primary processing of medicinal plants

7. Economy and commerce of medicinal plants and products

8. Quality assurrance systems in medicinal plant production

9. Leaf drug producing wild-crafted medicinal plant species (nettle, plantain, blueberry, mistletoe)

10. Herba drug producing wild-crafted medicinal plant species (goldenrod, yarrow, St. John's Wort, horsetail)

11. Flower drug producing wild-crafted medicinal plant species (black elder, hawthorn, linden tree)

12. Root, bark or fruit producing wild-crafted medicinal plant species (marshmallow, common juniper, wild rose cinchona)

13. The most important tropical spices worldwide (black pepper, ginger, cinnamon, nutmeg, clove bud)

GRADING SYSTEM:

- Class attendance is compulsory (registered by the lecturer) on the practical course, where max. 3 absences (25%) can be accepted
- Presentation of a choosen medicinal plant originates from wild habitats by powerpoint slide show (5 minutes/student)
- Participation on the field practices and a frield trip organized by the department in May (3 days)
- Successful plant identification test due in the Experimental Station, Medicinal Plant Unit, Soroksár during the last day of field practices, on May 15th
- One individual practice day during the spring semester spent in the Experimental and Research station, organized by the the course instructor
- Oral exam

LITERATURE:

- Bernáth J., Gosztola B., Pluhár Zs., Radácsi P., Szabó K., Zámboriné Németh É. (2018): Medicinal plants and spices (e-book chapters, available for our students on the e-learning platform created for the course: https://elearning.uni-mate.hu/course/view.php?id=34221
- Electronic version of lectures are available in pdf on the e-learning platform created for the course (see above)
- Hornok, L. (ed): Cultivation and processing of medicinal and aromatic plants. Academic Publisher, Budapest, 1991.

Up-to-date technologies of medicinal plant production

Study Programme: Horticultural Engineering

SEMESTER: 2026/27/2

Relevant semester of the Study Programme at MATE: 2

SUBJECT CODE: KERTU060N

ECTS Credits: 3

AIM OF SUBJECT:
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, demosnstrating 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.

CONTENT:
Time of lectures: on Tuesdays, 8.15-9.45, practices: on Wednesdays 10.00-11.30;

Classroom: Buda Campus, G building, Lecture hall no. G F101 /G11

Topics of lectures:

1. Basic terms of medicinal plant production

2. Growing site selection, crop rotation, soil tillage in medicinal plant production;

3. Propagation technologies;

4. Water and nutrient supply;

5. Plant protection and weed control;

6. Harvesting techniques and optimalization;

7. Primary and secondary processing, extraction techniques;

8. Quality assurrance systems applied in the MAP sector;

9. Field trip to visit companies involved in growing and processing of MAPs

GRADING SYSTEM:
Preparation and oral presentation of the homework (ppt) in the timeframe of the last lecture (5-10 min, incl. max. 10 slides), while the text version (3-5 pages, in doc or pdf) is to be submitted prior to the written exam by email

Participation on the field trip; written exam

LITERATURE:

E-book: Zsuzsanna Pluhár (ed.): Up-to-date technologies of medicinal plant production In:Éva Németh Zámboriné, Szilvia Sárosi, Levente Horváth : Modern Horticulture. Corvinus University of Budapest, Faculty of Horticultural Science, 2013. (ISBN: 978-963-503-552-6) (www.kertesztananyag.hu);

Pdf of each lecture available in the e-learning platform of the course

Fruit Production

Study Programme: Horticultural Engineering

SEMESTER: 2026/27/2

Relevant semester of the Study Programme at MATE: 4

SUBJECT CODE: KERTU043N

ECTS Credits: 4

AIM OF SUBJECT:
Introductionn of fruit growing forms. Aspects of site selection. Elements and concept of fruit cultivation system. Description of the elements of integrated cultivation technology. Demonstration of species-specific cultivation technologies.

CONTENT:
The subject is the knowledge of temperate fruit production and the practice-oriented professional issues of modern fruit production. It provides an overview of the most important factors of competitive quality fruit production. It presents the variants of commercial fruit production, paying special attention to the methods of integrated fruit production methods.

Ecological, environmental and consumer protection aspects play a prominent role in the teaching of the subject. Ecological conditions are of decisive importance for the success of commercial fruit production, therefore knowledge regarding the natural conditions of the choice of growing location is emphasized in the educational program.

The modernization of training systems and growing technologies plays a important role in the development of fruit production. Accordingly, when teaching the cultivation knowledge of individual fruit species, it deals with modern training systems and new methods of growing technology.

GRADING SYSTEM:
Attendance at lectures is recommended, and at seminars and field practices are obligatory. The semester grade is made up of the results of the written test during the semester and the exam (in 30-70% proportion).

LITERATURE:

Lecture and seminary materials are on the e-learning platform. Supplementary educational books and additional materials in pdf format, professional videos are available in e-learning platform.

Introduction to Vegetable Production

Study Programme: Horticultural Engineering

SEMESTER: 2026/27/2

Relevant semester of the Study Programme at MATE: 4

SUBJECT CODE: KERTU089N

ECTS Credits: 4

AIM OF SUBJECT:
The course introduces students to the most important basic knowledge needed for domestic vegetable production. This includes the general ecological conditions, economic conditions, storage and processing of products. We discuss how the production area is prepared for the cultivation of one or more vegetable crops. By completing the course, the student learn the principles of vegetable production both in the field and in forcing. Students also learn about domestic regulatory systems related to the subject and the principles of quality vegetable production. By completing the course, they will be able to organise the production work of a small-scale growing enterprise (e.g. a family farm) and gain knowledge how the processes work in large scale farms as well.

CONTENT:
Lecture topics:

Semester schedule, requirements

Vegetable cultivation: concept, importance, branches

Environmental demands I. (temperature and light)

Environmental demands II. (water, soil, nutrients)

Plant growing facilities

Vegetable cultivation technology varieties

Species and variety types

Propagation of vegetables

Harvest, post-harvest

Soil cultivation

Seaminar topics:

Nutritional value of vegetable species

Vegetable seeds

Irrigation

Crop rotation plan

Soilless cultivation

Vegetable plant development issues

Propagation plan, calculations

Plant care in vegetable production

Fertilization plan, calculations

1. A MIKROBASEJT SZERKEZETE

2. MIKROORGANIZMUSOK TÁPLÁLKOZÁSA ÉS NÖVEKEDÉSE

3. MIKROORGANIZMUSOK TÁPLÁLKOZÁSA ÉS NÖVEKEDÉSE 2.

4. MIKROBÁK TÖMEGTENYÉSZTÉSE (ipari fermentáció)

5. BIOLÓGIAI TRANSZFORMÁCIÓ IMMOBILIZÁLT MIKROBASEJTE

GRADING SYSTEM:

Attendance on the lectures (course 'L') is optional but recommended, since the materials of the presentations are important parts of the exam. Attendance on the seminars (course 'P') is mandatory. According to the regulations, absence from 33% of the seminars (three occasions per semester) is permitted. If the student is more than 15 minute late, it is considered absence. Attendance will be registered on every occasion. Attendance on the field practices is mandatory.

LITERATURE:

Required literature:

ppt presetations of lecture and practice will be handed out via e-mail or Microsoft team