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| **Title and Code** of the subject:  **Medicinal plants and their processing MTMEL7025A** | **ECTS Credit Points: 4** |
| **Type** of the subject: compulsory / optional | |
| **Ratio of theory and practice: 34/66 %** (credit%) | |
| **Type and number of classes per semester**: 14 hour(s) lecture and 28 hour(s) practice per **semester**  Number of teaching hours / week : 1+2 (lecture and practice) | |
| **Type of exam**: exam / practical course mark | |
| **Subject in the curriculum:** semester 1 | |
| Preliminary requirements:- | |

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| **Summary of content - theory**: |
| Course objectives:  The aim of the course is to give information about the significance of medicinal and aromatic plants production in Hungary and in the world. Uses of medicinal plants. Classification of medicinal plants. Active ingredients of medicinal plants. Quality assurance of drugs. The production technologies of the most important herb species in Hungary. Wild collection of medicinal plants. The most important wild-harvested herbs in Hungary. Primary processing of medicinal and aromatic plants.   1. Medical plant production in Hungary and in the world. Agroecological conditions of production. Drugs and their systematization. 2. Genetical background of medical and spice crops farming. Gathering of medical plants. 3. General and specific methods of production technology of medicine and aromatic plants. 4. Possibilities and practice of aromatic plant production in organic farming. 5. Processing and storing of medical and aromatic crops, extraction of active substances. 6. Qualifying of herbs. 7. Production of annual herbs: (Claviceps purpurea, Coriandrum sativum, Anethum graveolens, Carum carvi). 8. Majorana hortensis, Pimpinella anisum, Ocimum basilicum production 9. Satureja hortensis, Matricaria chamomilla, Calendula officinalis production 10. Production of biennial herbs: (Foeniculum vulgare, Digitalis lanata, Digitalis purpurea, Salvia sclarea). 11. Production of perennial herbs: (Mentha piperita, Lavandula angustifolia, Melissa officinalis). 12. Hyssopus officinalis, Thymus vulgaris, Levisticum officinale production. 13. Valeriana officinalis, Salvia officinalis production. 14. Papaver somniferum production. |
| **Summary of content - practice**: |
| Skills to be learnt: The main goals are to give effective practical knowledge connecting to the production and primary processing of medicinal plant. Field trips to medicinal plant producers and to Herbária company, which is the leader in the Hungarian herbs and spices industry and trade. Visit the Research Institute for Medicinal Plants and Herbs Ltd. in Budakalász.   1. Medical plant production in Hungary and in the world. Agroecological conditions of production. Drugs and their systematization. 2. Genetical background of medical and spice crops farming. Gathering of medical plants. 3. General and specific methods of production technology of medicine and aromatic plants. 4. Possibilities and practice of aromatic plant production in organic farming. 5. Processing and storing of medical and aromatic crops, extraction of active substances. 6. Qualifying of herbs. 7. Production of annual herbs: (Claviceps purpurea, Coriandrum sativum, Anethum graveolens, Carum carvi). 8. Majorana hortensis, Pimpinella anisum, Ocimum basilicum production 9. Satureja hortensis, Matricaria chamomilla, Calendula officinalis production 10. Production of biennial herbs: (Foeniculum vulgare, Digitalis lanata, Digitalis purpurea, Salvia sclarea). 11. Production of perennial herbs: (Mentha piperita, Lavandula angustifolia, Melissa officinalis). 12. Hyssopus officinalis, Thymus vulgaris, Levisticum officinale production. 13. Valeriana officinalis, Salvia officinalis production. 14. Papaver somniferum production. |
| **Literature, handbooks in English** |
| 1. Hornok, L. (1992) Cultivation and Processing of Medicinal Plants. John Wiley & Sons Ltd, Baffins Lane, Chicester, UK 338. p. ISBN 0-471-92383-4 2. WHO guidelines on good agricultural and collection practices (GACP) for medicinal plants. World Health Organization Geneva (2003) |
| **Competencies gained** *(acc. to the Regulation on training and outcome requirements)* |
| 1. **Knowledge:**  * Acquired basic knowledge of natural, technical, economic sciences, technologies, food-chain security giving the basis for medicinal plant production * Acquired knowledge to up-to date technologies used in the production and processing of medicinal plants and their practical application * Students will be able to proactively learn new skills and develop self for present and future progression * Students are capable to do adequate professional communication; can participate in the medicinal plant production process directly or support it; * Students actively and operatively attend to the implementation of R&D projects  1. **Skills:**  * Ability to recognise and solve the routine like problems occurring in the medicinal plant production processes * Students can understand and observe the law, protocols and regulations connecting to medicinal plant production  1. **Attitude:**  * The main goal is to attain a constructive approach to professional questions * Students look for ways to change work methods to improve performance * The health of the individual and society besides environmental protection play an important part in the professional decisions  1. **Autonomy and responsibility:**  * Students are able to bear the responsibility of the decisions and be responsible for own and his/her workforce’s work * Students are decisive at the right time * Based on the professional knowledge students can set up the implementation plan of R&D projects independently, and bear the responsibility for directly managing the development activity |
| **Responsible lecturer: Dr. Erika Kutasy, assistant professor, PhD** |
| **Terms of course completion:** |
| 1. Completing assignments 2. Giving a short presentation |
| **Form of examination:** |
| Oral exam |
| **Requirement(s) to get signature:** |
| Attendance at lectures is recommended, but not compulsory. Participation at practice is compulsory. Students may not miss more than three times during the semester. |

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| **Exam questions:** |
| 1. What are the characteristics of medical plant production in Hungary and in the world. 2. Definiton of drugs and their systematization. 3. Rules of gathering medicinal plants. 4. Characterize the general and specific methods of production technology of medicinal and aromatic plants. 5. Possibilities and practice of aromatic plant production in organic farming. 6. Primary processing of MAPs. 7. Evaluate the drying methods of MAPs. 8. Evaluate the essential oil extraction technologies for medicinal and aromatic plants. 9. Qualifying of herbs. 10. Usage, production and processing of annual herbs: Claviceps purpurea, Coriandrum sativum, Anethum graveolens, Carum carvi. 11. Usage, production and processing of annual herbs: Majorana hortensis, Pimpinella anisum, Ocimum basilicum production 12. Usage, production and processing of annual herbs: Satureja hortensis, Matricaria chamomilla, Calendula officinalis production 13. Usage, production and processing of biennial herbs: Foeniculum vulgare, Digitalis lanata, Digitalis purpurea, Salvia sclarea. 14. Usage, production and processing of perennial herbs: Mentha piperita, Lavandula angustifolia, Melissa officinalis. 15. Usage, production and processing of perennial herbs: Hyssopus officinalis, Thymus vulgaris, Levisticum officinale production. 16. Usage, production and processing of perennial herbs: Valeriana officinalis, Salvia officinalis production. 17. Usage, production and processing of Papaver somniferum. |