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| **Title and Code** of the subject: **MTMNO7005A Plant protection zoology and ecology** | **ECTS Credit Points: 3** |
| **Type** of the subject: **compulsory** / optional  |
| **Ratio of theory and practice: 3/0** (credit%) |
| **Type and number of classes per semester**: 56 hour(s) lecture and 28 hour(s) practice per **semester** Number of teaching hours / week : 4+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**: Basic and applied insect ecology: structure, dynamic and growth of population, characteristics of natural and agricultural landscapes and ecosystems, basic production biology, basic chemical ecology, population interaction especially (insect-plant, host-pray and host-parasite interactions), types of dormancy. Basic biogeography and invasion biology. General biology (anatomy and physiology, reproduction biology etc.) of Nematodes, Gastropoda, Myriapoda, Diplopoda and Insects. Characterisation of the most important pest species of Nematode, Gastropod, Myriopode and some Insect order: Saltatoria and Coleoptera. Characterisation of beneficial organisms belonging to the studied groups. |
| Course objectives: 1. Introduction
2. Nematoda, Mollusca, Myriapoda, Diplopoda
3. Insect morphology, physiology and reproduction biology
4. Lepismatidea, Blattoptera, Orthoptera
5. Coleoptera in general: Carabidae, Melolonthidae
6. Elateridae, Tenebrionidae
7. Mordellidae, Coccinellidae, Bituridae, Nitidulidae, Silvanidae, Laemopphloidae, Trogositidae, Cryptophagidae, Anobyidae, Bostrichidae
8. Chrysomelidae
9. Cerambycidae, Buprestidae, Bruchidae
10. Curculionidae
11. Scolitidae, Attelabidae, Apionidae, Sylphidae
12. Plant protection ecology I.
13. Plant protection ecology II.
14. Plant protection ecology III.
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| **Summary of content - practice**: Characterisation and identification practices of studied invertebrate taxa and species and damages caused by the economically most important species. |
| Skills to be learnt: Use of identification keys of studied taxa. Recognition of symptoms caused by the economically most important Nematoda, Gastropoda, Orthoptera and Coleoptera pests and recognition (identification) of the most important species of the studied taxa.1. Introduction, use of equipment and laboratory
2. Nematoda, Mollusca, Myriapoda, Diplopoda
3. different types of insect larvae, and symptoms caused by Coleoptera pests
4. Lepismatidea, Blattoptera, Orthoptera
5. Coleoptera in general: Carabidae, Melolonthidae
6. Elateridae, Tenebrionidae
7. Mordellidae, Coccinellidae, Bituridae, Nitidulidae
8. Silvanidae, Laemopphloidae, Trogositidae, Cryptophagidae,, Anobyidae, Bostrichidae
9. Chrysomelidae I
10. Chrysomelidae II
11. Cerambycidae, Buprestidae, Bruchidae
12. Curculionidae
13. Scolitidae, Attelabidae, Apionidae, Sylphidae
14. Beneficial species: Nematoda, Coleoptera
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| **Literature, handbooks in English**  |
| 1. Marczali Zs. (2020): Modul of applied entomology: Field pests in temperate zone of Europe http://dtk.tankonyvtar.hu/xmlui/handle/123456789/2953
2. Pénzes-Kónya, E. & Varga J (2020): Ecology for students of Medical Plant Production Expert higher level vocational training programme. https://dtk.tankonyvtar.hu/handle/123456789/3634
3. Marczali Zs. (2020): Insect ecology https://dtk.tankonyvtar.hu/handle/123456789/2949
4. Marczali Zs. (2020): Insect Physiology https://dtk.tankonyvtar.hu/handle /123456789/3205
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| **Competencies gained** *(acc. to the Regulation on training and outcome requirements)* |
| 1. **Knowledge:**
* deep knowledge in biology and population ecology of Nematoda, Gastropoda and Insect pests
* basic knowledge of sampling methods
* deep knowledge in invasion biology
* deep knowledge of the economically most important Nematoda, Gastropoda, Orthoptera and Coleoptera pests and beneficial organisms belonging to these taxa
1. **Skills:**
* use of identification keys
* autonomous use of laboratory equipment
* recognition of most important pests of the studied taxa and symptoms caused by them
1. **Attitude:**
* self-determination
* initiative
1. **Autonomy and responsibility:**
* Able to work both autonomously and in cooperation with colleges.
* Able to make a decision based on knowledge of the subject.
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| **Responsible lecturer: Dr. Antal Nagy (associate professor)** |
| **Other lecturer(s): Dr. Szabolcs Szanyi (assistant lecturer)** |

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| **Terms of course completion:** |
| 1. Make symptom and pest recognition (identification) based on processed materials
2. Take an exam at the end of the semester
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| **Form of examination:** |
| writing test |
| **Requirement(s) to get signature:** |
| symptom and pest recognition (identification) based on processed materials |

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| **Exam questions:** |
| Equal to the course objectives |