COURSE OF STUDY Plant Medicine (LM69, MdP)
ACADEMIC YEAR 2023-2024
ACADEMIC SUBJECT Ornamental plants pests (part of the Integrated Course in Green Management and Protection – 9 CFU)

General information	
Academic subject	Ornamental plant pests
Degree course	Plant Medicine (LM69, MdP)
Academic Year	2023-2024
European Credit Transfer and Accumulation System (ECTS)	3
Language	Italian, the course in English will be offered on request—teaching material may be in English.
Academic calendar	II year, I semester, from 25/09/2023 to 19/01/2024
Attendance	Non-compulsory. The course has a laboratory approach, and I suggest the presence for a much rich and embedding experience.

Professor/ Lecturer	
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Department and address	Dipartimento di Scienze del Suolo, della Pianta e degli Alimenti – IV scala, V piano, stanza n.15
Virtual headquarters	Teams: Ornamental plants pests, teams code zokw4j8
Tutoring (time and day)	Always available on the WA mobile phone channel

Syllabus	
Learning Objectives	The teaching is a related and supplementary activity dedicated to deepening knowledge about phytophagous pests of ornamental species, their damage and management.
Course prerequisites	Basic knowledge of identifying insects, their biology, ecology, and ethology, and managing harmful pests. Valuable elements of botany and zoology, and crop protection will be recalled in the course.
Contents	**Course structure and prerequisites need.** ○ Expectations and tasks for the course target the. Region Of Interest (ROI) usefulness and service of Entomology to society, particularly for managing ornamental plant pests. Hints on techniques, laboratory, field visits and coursework. Candidate-led question time: approximately two hours. **Ornamental plant pests, approximately eight hours** ○ This course section presents the ornamental plant pests active in the area and easy to encounter during the field experience. Given the number of species, candidates will study different cases with particularities in their damage that enable them to control action linkage. The attempt is to maximise the didactic efficacy of the few hours available in the course compared to the enormous diversity of species and damage we can encounter even in our urban park. ○ Considerations on phytophagous pests of ornamentals entering European borders.

	○ Symbiont microorganisms are mainly responsible for phytophagous damage. **Management of ornamental plant pests, multidisciplinary case studies approx. six hours** ○ Management of ornamental plant pests will be discussed with the candidates as case studies, first guided by the lecturer, then studied by the candidates divided into study groups, only supervised by the lecturer. ○ The case studies will actively involve candidates in "war games" in the form of IPM-DSS, useful for professional preparation and the final interview. ○ The choice of species for the case studies will favour phytophagous pests due to their presence on the territory, the extent of damage, complexity of the approach. **Laboratory and field exercises, approximately fourteen hours** ○ The time spent in the field and laboratory enrich the candidate's theoretical experience from the previous sections with a practical-experiential component. ○ The laboratory and field exercises join identifications preparative practice with bibliographic research driving to direct comparison of the specimen and the respective taxonomic characters scrutiny. The practice continues with scrutinising the identified insect biology, ecology, and ethology to build the life tables hypothesising control actions to set. Choosing different control actions and noting their merits and flaws will train and test the candidates' collective critical thinking skills. ○ The lecturer will drive exercises in the laboratory on the fifth floor of the Entomology and Zoology section.
Books and bibliography	Alford D.V. (2012). Pests of Ornamental Trees, Shrubs and Flowers A Colour Handbook 2nd Ed. Academic Press, 477 pp. Gibb T. (2015). Contemporary Insect Diagnostics the Art and Science of Practical Entomology. Academic Press, 332 pp. Minelli A. & Bologna M.A. Ed(s) (2023). Sistematica ed evoluzione degli esapodi, Liguori Editore, ISBN978-88-207-6988-8, 648 pp.
Additional materials	Access to databases available from UNIBA-Aldo Moro.

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
75	16	14	45
ECTS			
3	2	1	
Teaching strategy	The course will also be presented with slideshows and guided direct experiences and case studies in the laboratory. The course includes the critical analysis of scenarios and structuring IPM strategies. Course participants will also develop skills through practical experiences using IoT or smart technologies. The lecturer will offer the course material in English and will deliver the course in English or dual language, as required or as appropriate. The course and teaching materials will be appropriately shaped for recipients with disabilities and SLD for specific learning needs. With the same inclusive intent, the lecturer will adapt the course to the needs of students who cannot attend full-time.		

Expected learning outcomes	
Knowledge and understanding on:	○ Identify the species or species group responsible for a type of damage. ○ Critically understand the techniques that can be used to identify the damaging species or homogenous species group. ○ Critically understand the approach and construction of a DSS to protect ornamental plants throughout their life cycle.
Applying knowledge and understanding on:	○ Recognise the damage of the main pest in relation to the functional morphology of the damaging pest body region. ○ To apply the main damage mitigation techniques. ○ Knowledge in sorting the control actions of an IPM according to the execution environment. ○ Be aware of the effects of control choices on non-target organisms, including humans, for ornamentals in peri- and urban environments.
Soft skills	• *Making informed judgments and choices* • *At the time of the assessment, the candidate will be able to* ○ carry out an appropriate description and then identification of the species or group of homogeneous damaging species encountered. ○ formulate a matching IPM strategy in their control actions to mitigate the damage, respecting sustainability, and antifragility criteria. • *Communicating knowledge and understanding* • *At the time of the assessment, the candidate will be able to* ○ communicate in oral and written form the determinants of damage and IPM actions in fluent Italian and English technical language. ○ share their approach in a multidisciplinary group to mitigate pest damage on ornamentals. ○ share the determinants of mitigation choices, particularly their sustainability and antifragility. • *Capacities to continue learning.* • *At the time of the assessment, the candidate will be able to* ○ update one's knowledge by accessing and drawing on, also with transgressive/regressive strategies, the knowledge available on the available repositories, without limitations to the year of publication or the format of the media. ○ critically analyse the knowledge disseminated in interviews, presentations, and communications, also offered as valuable technical-scientific content, being able to assess the consistency of the information.

Assessment and feedback	
Methods of assessment	The single and concurrent examination for the IC consists of an oral test, with an application project (project work) presentation on the topics developed during the theoretical and practical-exercise classroom, field and laboratory hours in the three modular areas that make up the IC. Candidates may take the intermediate assessment test (exemption), scheduled in the period 13-24/11/2024, in the same year as the course. The result of this test is valid for the year of attendance and will be weighed against the score of the final test. Three questions will be proposed per candidate, which will also discuss the project work for a maximum of 7 minutes. Incoming candidates with international mobility projects will be able to take the test in English, i.e. as a written test with three open-ended questions, in addition to the discussion of the independent work (project work).
Evaluation criteria	• Knowledge and understanding

	• Ability to identify the species or homogeneous group of species and management methods.
	• Applying knowledge and understanding
	  • Ability to trace the damage back to the species or homogeneous group of species that inflicted it.
	• Autonomy of judgment
	  • Ability to identify the technical solution, control action in IPM strategy, sustainable or antifragile appropriate for solving the problem.
	• Communicating knowledge and understanding
	  • Personal ability to communicate orally with specific reference to technical vocabulary in Italian and English.
	• Communication skills
	  • The ability to organise acquired knowledge for sharing as a presentation or narrative for educational purposes will be assessed.
	• Capacities to continue learning
	  ○ The ability to learn the technical-conceptual framework proposed in the course will be assessed.

Criteria for assessment and attribution of the final mark	Learning will be measured as the critical ability to discuss the subject for the direct use of insects as food or as components of preparations. The candidate should be able to recognise the favourable and unfavourable characteristics of the insects covered in the course. The pass mark (18/30) is achieved by extensively and in-depth discussing one of the three topics for at least 10'. The candidate who discusses the three topics with quality of presentation, argumentative ability, autonomy of judgement and integration between the issues will bring the maximum mark (30/30). The case of the highest marks and original discussion merits a 'Cum Laude' grade. The overall learning objective is for the candidate to continually improve ornamental plant pest management with sustainable and antifragile intent. The examination for international students can be taken in English.
Additional information	