General Information	
Academic subject	Integrated pest management of crops (Integrated course: Principles of integrated crop protection)
Degree course	Scienze Agro-Ambientali e Territoriali (CLM69 and 73)
ECTS credits	3 ECTS (2 ECTS Lectures + 1 ECTS Laboratory)
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Enrico de Lillo	enrico.delillo@uniba.it	AGR/11

ECTS credits details	Area		
	Related activity Forestry and environmental disciplines		

Class schedule	
Period	first semester
Year	first year
Type of class	Lectures, 2 ECTS (16 hours) Laboratory and field classroom and workshops, 1 ECT (14 hours). E-learning using public (eg Teams) and dedicated (Agripodcast) platforms can be used, on demand as teaching/learning facilities for students with disabilities and for working students, student athletes and students with babies

Time management	
Hours	75
In-class study hours	30 (16 Lectures + 14 Laboratory)
Out-of-class study hours	45

Academic calendar	
Class begins	September 28, 2020
Class ends	January 22, 2021

Syllabus	
Prerequisites/requirements	General and applied biological and zoological knowledge
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	*Knowledge and understanding* o Knowledge and understanding of the morphological, taxonomical, biological, ethological and ecological aspects concerning phytophagous organisms and their natural enemies o Knowledge and understanding of the basic aspects of the integrated plant and product protection from phytophagous organisms, and the national and international related norms *Applying knowledge and understanding* o Knowledge and understanding for the identification and characterization of phytophagous organisms, and their natural enemies, by means conventional and advanced methods and techniques, included biotechnologies o Knowledge and understanding for the application of direct and indirect (on the basis of the symptoms) monitoring plans of phytophagous organisms o Knowledge and understanding for planning and managing the IPM of the crops and their products from phytophagous organisms in order to improve the qualitative, quantitative and sanitary aspects of the products as well as their storing and

	marketing *Making informed judgements and choices* o Ability of understanding biological, ethological and ecological phenomena which allow the success of these plant feeders o Ability of application of treatments able to limit the development of phytophagous organisms in the considered context *Communicating knowledge and understanding* o Ability of description of phytophagous nematodes and mites, and the biological, ethological and ecological phenomena of these plant feeders in the considered context *Capacities to continue learning* o Ability of updating the own knowledge on phytophagous nematodes and mites, and the biological, ethological and ecological phenomena involving these plant feeders in the considered context The results of the expected learning, in term of knowledge and ability, are listed in the Annex A of the Didactic Regulation of the Master Science Course in Scienze Agro-Ambientali e Territoriali (expressed by the European descriptors of the study title).
Contents	Introduction. Integrated pest management of the plant feeders. Management methods. Sampling methods and tools. IPM for stone fruits: nematodes, thrips, aphids, peach twig borer, Oriental fruit moth, Mediterranean fruit fly, cherry fly, drosophila. IPM for grapevine: nematodes, thrips, mealybugs, European grapevine moth, mites. IPM for olive: olive black scale, leopard moth, olive moth, olive fly. IPM for citrus: mites, leafhoppers, white flies, aphids, coccids and scale insects, citrus leafminer, fruit fly. IPM for ornamental and horticultural plants: slugs and snails, nematodes, mites, white flies, leafminers, Colorado potato beetle, rodents. Protocols and tools needed for monitoring and sampling. Identification of the main plant feeders, the induced symptoms and their natural enemies.
Course program	
Bibliography	• Notes of the lectures • Pollini A., 1998. Manuale di Entomologia applicata. Edagricole, Bologna. • Pellizzari Scaltriti G., 2002 - Parassitologia animale dei vegetali. CLEUP Editore. Study schemes: • presentations and other didactic material provided during the lessons Additional readings: • AA.VV., 2014 - Nematologia Agraria generale e applicate. SIN • AA.VV., 2006 – La difesa della vite dagli artropodi dannosi. A cura di Ragusa S., Tsolakis H., Università degli Studi di Palermo, 222 pp. • Baccetti B., Barbagallo S., Süss L., Tremblay E. 2000. Manuale di zoologia agraria. Antonio Delfino Editore, Roma. • Perry R.N., Moens M., 2006 - Plant Nematology. CABI, Wallingford, UK • Tremblay E., 1981-2000. Entomologia applicata. Voll. II-IV. Liguori, Napoli.

	• Viggiani G. 1994 e 1997. Lotta biologica e integrata nella difesa fitosanitaria. Voll. I e II. Liguori Editore, Napoli. • Zhang Z.-Q., 2003 - Mites of greenhouses. Identification, biology and control. CABI Publishing, Wallingford, UK.Papers on national and international Journals
Notes	Students could get a copy of all presentations utilized for lectures, including also those eventually needed for the practical activities, downloading them through the repository at the ATutor digital platform on the website http://tempus-it.agrif.bg.ac.rs/login.php.
Teaching methods	The subjects are provided with several examples and illustrations by means of Power Point presentations, movies, practical drills in the classroom and laboratory
Assessment methods	Only the students enrolled in the academic year during which this module is offered, can have an intermediary exam during the teaching period of module. The result of this intermediary exam remains valid for the whole academic year and concurs to the final evaluation of the student. The intermediary exam will be given on the subjects treated during the lessons and the practical activities as reported in the Didactic Regulation in Management and sustainable development of rural Mediterranean systems (art. 9) and syllabus (annex A) and which is correlated to the actual teaching period. A minimum of 3 questions will be proposed to the student; one of them will regard general aspects, whereas two others will regard topics treated in the special parts in which the students has to demonstrate the ability in developing a control strategy based on the acquired knowledge in bio-ethology and ecology. The evaluation of the intermediary exam is expressed in thirtieths. At the end of the module teaching period, the students, who passed positively the intermediary exam, can give the final exam concerning on the subjects treated during the lessons and the practical activities since the intermediary exam, as reported in the Didactic Regulation in Management and sustainable development of rural Mediterranean systems (art. 9) and syllabus (annex A) and which is correlated to the actual teaching period. Students who did not pass or give the intermediary exam will be examined on the whole subjects treated during the lessons and the practical activities as reported in the Didactic Regulation in Management and sustainable development of rural Mediterranean systems (art. 9) and syllabus (annex A) and which is correlated to the actual teaching period. The intermediary and the final exams consist of an oral examination. The evaluation of the student is based on criteria previously fixed such as reported in the Annex A of the Didactic Regulation in Management and sustainable development of rural Mediterranean systems. The exam for foreign students can be given in English according to the above reported modalities.

Evaluation criteria	• *Knowledge and comprehension ability*
	  ○ Description of the basic morphological, biological, ecological and ethological characteristics of the phytophagous organisms, and their natural enemies
	  ○ Description and evaluation of the basic aspects of the integrated plant and product protection from phytophagous organisms, and the national and international related norms
	• *Knowledge and applied comprehension ability*
	  ○ identification phytophagous organisms, and their natural enemies, also on the basis of the symproms
	  ○ planning the monitoring of phytophagous organisms

	○ planning an integrated protection strategy of crop and products from phytophagous organisms in order to improve the qualitative, quantitative and sanitary aspects of the products, as well as their storing and marketing • *Autonomy of judgement* ○ formulation of potential treatments on the factors favouring the success of phytophagous organisms ○ evaluation of the planning and corrective treatments able to limit the success of phytophagous organisms • *Communication skills* ○ exhaustive description and illustration, with appropriateness of terms, richness of examples and correlation of the basic aspects which favour the success of phytophagous organisms • *Learning ability* ○ adaptation of the basic cognitive tools acquired during the module in order to explain and solve numerous applied problems and diversified case of study
Further information	
Visiting hours	Wednesday, Thursday and Friday from 11.30 am to 1.30 pm, after a request of appointment by mail or phone. Tutoring could be also made through the most common applications.