

**COURSE OF STUDY Bachelor degree: Food Science and Technology (L26)**
**ACADEMIC YEAR 2023-2024**
**ACADEMIC SUBJECT Biotic and abiotic diseases (6 ECTS) - I.C. Alterations in produce and stored goods (9 ECTS)**

General information	
Year of the course	<i>Second</i>
Academic calendar (starting and ending date)	<i>First semester (September 25<sup>th</sup>, 2023 - January 19<sup>th</sup>, 2024)</i>
Credits (CFU/ECTS):	6
SSD	<i>Plant Pathology (AGR/12)</i>
Language	<i>Italian</i>
Mode of attendance	<i>No Compulsory</i>

Professor/ Lecturer	
Name and Surname	<i>Antonio Ippolito</i>
E-mail	<a href="mailto:antonio.ippolito@uniba.it">antonio.ippolito@uniba.it</a>
Telephone	<i>0805443053</i>
Department and address	<i>DIP. DISSPA – Università degli Studi di Bari</i>
Virtual room	<i>Microsoft Teams: code : h0f4pcq</i>
Office Hours (and modalities: e.g., by appointment, on line, etc.)	<i>From Monday to Friday by e-mail or telephone appointment. Tutoring can also be carried out electronically</i>

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
<i>150</i>	<i>32</i>	<i>28</i>	<i>90</i>
CFU/ETCS			
<i>6</i>	<i>4</i>	<i>2</i>	

<b>Learning Objectives</b>	The course aims to provide adequate basic knowledge for the study and recognition of alterations and causal agents of a microbial and abiotic nature that affect products and vegetable commodities for fresh consumption and processing, as well as to perform and verify the effectiveness of strategies, means, and methods of control as a function of quality.
<b>Course prerequisites</b>	Basic knowledge of biology.

<b>Teaching strategy</b>	The course will be dealt with PowerPoint presentations, video clips, mailing lists, edmodo, dropbox, on-line consultations of internet sites during lessons and/or practicum, case-study on samples of infected material, classroom and/or laboratory practicum, visits to farms and packinghouses.
<b>Expected learning outcomes in terms of</b>	

<b>Knowledge and understanding on:</b>	<ul style="list-style-type: none"> <li>• Knowledge on biotic and abiotic diseases and causal agents affecting vegetable products for fresh consumption and processing;</li> <li>• Knowledge in apply strategies, means and methods of control in order of preserving the quality of produce.</li> </ul>
<b>Applying knowledge and understanding on:</b>	<ul style="list-style-type: none"> <li>• Applying knowledge to identify biotic and abiotic diseases and set up control measure in function of preserving the quality of products.</li> </ul>
<b>Soft skills</b>	<ul style="list-style-type: none"> <li>• <i>Making informed judgments and choices</i> Ability to acquire information and identify appropriate solutions to control the development of biotic and abiotic diseases of products for fresh consumption and processing.</li> <li>• <i>Communicating knowledge and understanding</i> The students will acquire ability to describe in oral and written form biotic and abiotic diseases that reduce the quality of the products, the predisposing factors and the means for controlling their development.</li> <li>• <i>Capacities to continue learning</i> The students will acquire ability to deepen and update the knowledge on the causal agents of biotic and abiotic diseases of products for fresh consumption and processing.</li> </ul>
<b>Syllabus</b>	
<b>Content knowledge</b>	<p><i>Introduction to the discipline; Damage and importance of diseases; Concept of disease; Classification of diseases; Symptomatology and effects of diseases on physiological functions; Host-parasite relationships; Epidemiology and diagnosis. Principles of controlling diseases of crops and products in pre- and post-harvest, through legislative measures, interventions on the environment, host and pathogen; fungicides; Biological and integrated control (IPM). Non-parasitic diseases: general outline of major diseases and damage from abiotic agents also in a controlled environment. Fungal and fungal-like diseases: general and major diseases within the various systematic groups. Bacterial Diseases: General aspects and major diseases. Viruses and virus-like diseases: general aspects and major diseases.</i></p>
<b>Texts and readings</b>	<ul style="list-style-type: none"> <li>• “Patologia vegetale” – Autori vari, Edises Editore, 2021.</li> <li>• “Patologia Postraccolta dei Prodotti Vegetali” – V. De Cicco, P. Bertolini, M.G. Salerno (Ed.) Piccin Editore, Bologna 2009.</li> </ul>
<b>Notes, additional materials</b>	<ul style="list-style-type: none"> <li>• Lecture notes and lecture materials provided during the course.</li> </ul> <p>For further information:</p> <ul style="list-style-type: none"> <li>• Agrios G.N. (2005) Plant Pathology (fifth edition), Academic Press (USA);</li> <li>• W. K. Purves, D. Sadava, G. H. Orians, H. C. Heller (2009) Biologia: L'evoluzione della diversità (parteIV), Zanichelli, Bologna;</li> <li>• Snowdon A.L. A colour atlas of post-harvest diseases &amp; disorders of fruit &amp; vegetables. Vol. 1 e 2, Wolfe Scientific ed., London, 1990.</li> <li>•</li> </ul>
<b>Repository</b>	All teaching material will be available to students on web platforms (Teams code <i>h0f4pcq</i> ).
<b>Assessment</b>	

Assessment methods	<p>The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom and in the laboratory/production plants, as reported in the Academic Regulations for the Bachelor Degree in Food Science and Technology (article 9) and in the study plan (Annex A).</p> <p>Students attending at the lectures may have a middle-term preliminary exam, consisting of a written test, relative to the first part of the program, which will concur to the final evaluation and will be considered valid for a year.</p> <p>The evaluation of the preparation of the student occurs on the basis of established criteria, as detailed in Annex B of the Academic Regulations for the Bachelor Degree in Food Science and Technology.</p> <p>Non-Italian students may be examined in English language.</p>
Assessment criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>Describe the biology of pathogens, epidemiology, control means and more specifically the major diseases of plant products taught during the course </li></ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>Describe diseases of biotic and abiotic origin and set up of control programs in order to maintain the quality of plant products.</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>Provide reasonable hypotheses for the prevention and control of major diseases of plant products presented as case studies</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>Describe the processes underlying disease development and control methods analyzed in the case study</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>Introduce an Integrated Pest Management that takes into account intrinsic and extrinsic predisposing factors in order to reduce the damages to plant product presented as a case study</li> </ul>
Final exam and grading criteria	<p>The evaluation criteria that contribute to the attribution of the final mark will be: knowledge and understanding, the ability to apply knowledge, autonomy of judgment, i.e. the ability to criticize and formulate judgments, communication skills.</p> <p>The Examination Committee has a score ranging from a minimum of 18 to a maximum of 30 points for a positive assessment of the student's performance. By unanimous vote of its members, the Board may award honours in cases where the final mark is 30.</p>
Further information	