

**ACADEMIC YEAR 2022/2023**

General Information	
Integrated Teaching	<b>ECONOMICS AND STATISTICS</b>
Teaching Modules	<b>Agricultural Economics Statistics Physics Computer science (Informatics)</b>
Degree Course	Veterinary Medicine (LM42)
Course Year	1 <sup>st</sup>
European Credit Transfer and Accumulation System (ECTS)	11 (lectures: 10 ECTS; practical activities: 1 ECTS)
Language	Italian
Academic calendar	II 7 weeks period
Attendance	Mandatory

Professors / Lecturers	E-mail	Telephone
Rocco Roma	<a href="mailto:rocco.roma@uniba.it">rocco.roma@uniba.it</a>	080 5442884
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Mario Mastromarco	<a href="mailto:mario.mastromarco@uniba.it">mario.mastromarco@uniba.it</a>	-
Paolo Capozza	<a href="mailto:paolo.capozza@uniba.it">paolo.capozza@uniba.it</a>	080 5443835
Headquarters	Campus of Veterinary Medicine, S.P. 62 per Casamassima km 3, 70010 Valenzano	
Virtual headquarters	Piattaforma Microsoft Teams	
Tutoring (time and day)	<p><b>Rocco Roma:</b> from Monday to Friday from 8.30 to 9.30 by appointment both in presence and in remote mode</p> <p><b>Monica Cazzolle:</b> in presence or in remote mode by appointment to be agreed by e-mail.</p> <p><b>Mario Mastromarco:</b> in presence or in remote mode by appointment to be agreed by e-mail.</p> <p><b>Paolo Capozza:</b> in presence or in remote mode by appointment to be agreed by e-mail.</p>	

Syllabus	
<b>Learning Objectives</b>	<p>The general objective of the integrated course is to provide adequate preparation in disciplines useful, on the one hand, to the understanding of physical phenomena that affect the physiology of animals and on the other, basic knowledge of both analysis tools and study of the data collected in veterinary practice and knowledge of the economic environment in which the food chain, and in particular the zootechnical one, operate.</p> <p>As for the educational objectives of the individual courses, the course of <b>Agricultural Economics</b> aims to offer the student the basic concepts and methodology used in the study of economics to be able to interpret the main economic phenomena. In particular, an in-depth study of consumer and business behaviour will be carried out, the functioning of the economic system as a whole with the specific objective of developing the capacity to identify appropriate solutions to improve the competitiveness of products of animal origin. Lectures will also deepen knowledge of the principles of Microeconomics and Macroeconomics; the fundamental laws of market balance. The ability to read and analyse the balance sheets of enterprises will develop alongside the study of the evolution and role of Community and local</p>

	<p>agricultural policies, on their effect on the performance of agricultural holdings.</p> <p>For the <b>Statistics</b> module, the course aims to convey to the student the basic knowledge and statistical tools useful for the study of the phenomenon and the interpretation of data.</p> <p>For the <b>Physics</b> module, students must know and be able to understand topics of classical physics such as those related to the mechanics of the material point, the mechanics of the systems of material points and rigid body, fluid mechanics, thermology, thermodynamics, electromagnetism, electromagnetic waves and topics of modern physics.</p> <p>For the <b>Informatics</b> module, the course aims to provide topics of computer literacy with reference to the needs of the scholar of veterinary disciplines. The basic elements of computer architecture, operation and use will be covered. More general application programs will be introduced with hints to the programming elements. The emphasis, placed on practical experience, aims to develop, in compliance with EU recommendations, digital skills that can be spent in the professional field.</p>
<b>Prerequisites</b>	<p><b>Economics:</b> Required mathematics notions: understanding the concept of function, graphs of functions; derived functions; study of functions (first and second order conditions for maximum and minimum); simple systems of linear equations.</p> <p><b>Statistics:</b> Basic knowledge of elements of mathematics and computer science.</p> <p><b>Physics:</b> Basics of Mathematics</p> <p><b>Informatics:</b> Familiarity with the use of computers and new technologies in general.</p>
<b>Contents of the Integrated Teaching</b>	<ul style="list-style-type: none"> <li>• <b>Presentation of the Integrated Teaching:</b> Learning objectives, Professors/Lecturers, Teaching Modules, Organization of the lessons, Reference books and additional study material, Learning assessment and evaluation criteria, Biosafety rules for students' participation in the practical lessons</li> </ul>
<p>Contents of the Teaching Module of <b>Agricultural economics</b></p> <p>Teacher: <b>Rocco Roma</b> <b>ECTS:4</b></p> <p><b>Hours: 40</b></p>	<p>The module refers to Basic Science</p> <ul style="list-style-type: none"> <li>• Economy of production and market. <ul style="list-style-type: none"> <li>➤ Goods, needs and utilities; production and costs.</li> <li>➤ The market: demand, supply, elasticity and market forms.</li> <li>➤ Institutions of Macroeconomics</li> </ul> </li> <li>• Business administration: <ul style="list-style-type: none"> <li>➤ Entrepreneur and agricultural production; factors of production. Theoretical postulates of the enterprise: figures; type and problems of the company; efficiency.</li> <li>➤ Balance sheet: objectives and types. Balance sheet and final balance. The structure of the balance sheet. Assets. Liabilities. Production and production cost considerations.</li> <li>➤ The choices of the entrepreneur regarding the products, factors, technologies of production, transformation of the products, improvements and investments.</li> </ul> </li> <li>• Policies and Institutions: <ul style="list-style-type: none"> <li>➤ The agri-food system: characteristics and competitive strategies.</li> <li>➤ Common Agricultural Policy: lines and instruments of intervention.</li> <li>➤ Local politics.</li> <li>➤ International trade</li> </ul> </li> </ul>
<p>Contents of the Teaching Module of <b>Statistics</b></p> <p>Teacher: <b>Monica Cazzolle</b> <b>Lecture:</b> <b>ECTS: 2</b> <b>Hours: 16</b></p>	<p>The module refers to Basic Subjects</p> <ul style="list-style-type: none"> <li>• Definition of statistics. <ul style="list-style-type: none"> <li>• Population and sample (overview of sampling methods). Detection of a statistical phenomenon and application in the field of animal husbandry, experimental protocol. Fasi di un'indagine.</li> </ul> </li> <li>• Introduction to descriptive statistics: <ul style="list-style-type: none"> <li>➤ qualitative and quantitative variables, statistical distributions, tabular and graphical representation, analytical and position averages, measures of variability and variability indices.</li> <li>➤ association between two characters (dependence and independence), scope of</li> </ul> </li> </ul>

<p><b>Practical activities</b> <b>ECTS: 1</b> <b>Hours: 10</b></p>	<p>application of simple linear regression models, multiple regression hints, hints at test theory (null hypothesis, alternative hypothesis, area of acceptance and rejection, level of significance).</p> <ul style="list-style-type: none"> <li>• Data sources.</li> </ul> <p>The Practical Exercises will be carried out through MS Excel and/or online platforms for data collection or through the use of SPSS (or PSCP) for data processing simulations.</p>
<p>Contents of the Teaching Module of <b>Physics</b></p> <p>Teachers: <b>Mario Mastromarco</b></p> <p><b>ECTS: 2</b></p> <p><b>Hours: 16</b></p>	<p>The module refers to Basic Subjects</p> <ul style="list-style-type: none"> <li>• Units of measurement and physical quantities: <ul style="list-style-type: none"> <li>➢ System of Units, Physical Quantities: scalars and vectors, Vector Algebra.</li> <li>➢ Point Mechanics: Kinematics - Straight Motion: Straight Motion Uniform, Straight Motion Uniformly Accelerated, Harmonic Motion, Circular Motion: Uniform Circular Motion Uniformly Accelerated.</li> </ul> </li> <li>• Dynamic <ul style="list-style-type: none"> <li>➢ First Principle of Dynamics, Second Principle of Dynamics, Third Principle of Dynamics,</li> <li>➢ Types of Forces: Force Weight, Elastic Force, Constrictive Reactions, Centripetal Forces, Motion on an inclined plane, Work in fields of uniform forces, Work in fields of central forces, Potential Energy, Kinetic Energy, Principle of Mechanical Energy Conservation</li> </ul> </li> <li>• Fluid mechanics: <ul style="list-style-type: none"> <li>➢ General properties of fluids, Pressure, Pascal's Law, Stevin's Law. Atmospheric pressure, Measurement of pressures: open tube and closed tube manometers, Blood pressure, Archimedes' principle, Fluid dynamics, Stationary regime, Equation of continuity and flow rate, Bernoulli's theorem and its applications, Viscosity, Poiseuille's equation, Blood flow in the human body.</li> </ul> </li> <li>• Thermology: <ul style="list-style-type: none"> <li>➢ Temperature, thermometric scales, thermometers.</li> </ul> </li> </ul> <p>Thermodynamics: Thermodynamic System, Thermodynamic Equilibrium, State Variables and Equation of State, Transformations, Work, Heat, Heat Transfer, First Law of Thermodynamics, Perfect Gases, Equation of State of perfect gases, Transformations of perfect gases, Perfect Gas Model, Kinetic Theory (notes).</p> <ul style="list-style-type: none"> <li>• Electromagnetism: <ul style="list-style-type: none"> <li>➢ Coulomb force, Electric field, Voltage, Current and Ohm's law</li> </ul> </li> </ul>
<p>Contents of the Teaching Module of <b>Informatics</b></p> <p>Teacher: <b>Paolo Capozza</b></p> <p><b>ECTS:2</b></p> <p><b>Hours: 16</b></p>	<p>The module refers to Basic Subjects:</p> <ul style="list-style-type: none"> <li>• Computer literacy: information and coding, computer architecture and operation and operating system Problem-solving techniques</li> <li>• Use of text editor</li> <li>• Spreadsheet: professional applications</li> <li>• Web networks and services (e.g.: PEC, digital signature, ...)</li> </ul>
<p><b>Organization of the Practical lessons</b></p>	<ul style="list-style-type: none"> <li>➢ <b>Statistics:</b> Exercises in the classroom to verify the ongoing learning of the concepts developed and transmitted during the course. The student will be given the opportunity to use a personal computer to work independently.</li> </ul>
<p><b>Biosafety rules for students' participation</b></p>	<p>For the practical activities that will take place in the laboratory, students will be allowed to enter the laboratory only if wearing the appropriate personal protective clothing (lab coat) and</p>

<b>in the practical lessons</b>	equipment (gloves) and in accordance with the current Regulations of the Department of Veterinary Medicine of the University of Bari in the matter of Entrance to and Attendance and Functioning of the Laboratories. ( <a href="https://w3.uniba.it/ricerca/dipartimenti/dipmedveterinaria/regolamenti/regolamento-dei-laboratori-dimev.pdf">https://w3.uniba.it/ricerca/dipartimenti/dipmedveterinaria/regolamenti/regolamento-dei-laboratori-dimev.pdf</a> )
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<b>Study Material for self-study</b>	
<b>Reference Books</b>	<p><b>Teaching module of Agricultural Economics:</b> Notes from the lessons and teaching materials distributed during the course. Suggested texts: C. De Vincenti, E. Saltari, R.Tilli Manuale di Economia Politica - Carocci Editore Acemoglu D., Laibson D., List J. Principi di economia politica. Teoria ed evidenza empirica Pearson Ed. N.G.Mankiw Principi di economia – Zanichelli J.B.Taylor Economia – Zanichelli L. Jacoponi e Romiti Economia e Politica Agraria - Edagricole M. De Benedictis, M. Cosentino: Economia della Azienda Agraria – Il Mulino</p> <p><b>Teaching module of Statistics:</b> Notes from the lessons and teaching materials distributed during the course. In-depth texts in the Library of the Dip. of Veterinary Medicine: Analisi statistica dei dati biologici / Michael C. Whitlock, Dolph Schluter; Edizione italiana a cura di Giorgio Bertorelle. - Bologna : Zanichelli, 2010 Biostatistica : concetti di base per l'analisi statistica delle scienze dell'area medico-sanitaria / Wayne W. Daniel. - 2. ed. - Napoli : EdiSES, [2007] Ulteriori testi di approfondimento: Elementi di Statistica di Base per le scienze Zootecniche; Giuseppe Conte, Corrado Dimauro, Niccolo Macciotta. Ed. EFG per ASPA - 2018 Fowler Jim, Jarvis Phil, Chevannes Mel – “Statistica per le professioni sanitarie” Ed. EdiSES a cura di Corrado Magnani (2011); Other texts chosen by the student after consultation with the teacher.</p> <p><b>Teaching module of Physics:</b> Fisica Principi e Applicazioni, Casa Editrice Ambrosiana, Giancoli. Fondamenti di Fisica, Serway Jewett, Bellotti – Cataudella. Lecture slides.</p> <p><b>Teaching module of Informatics:</b> C. Frigerio, F. Maccaferri, F. Rajola ICT e società dell'informazione McGraw Hill (2019 )</p>
<b>Additional material</b>	Additional teaching material is provided by teachers during the course and is available on the TEAMS teaching platform

<b>Work Schedule</b>			
<b>Ore</b>			
Total	Lectures	Hands-on (laboratory, working groups, seminars, field trips)	Out-of-class study hours / Self-study hours
275	80	10	185
<b>ECTS</b>			
11	10	1	/

<b>Teaching Strategy</b>	<b>Agricultural Economics module:</b> The theoretical part of the course is held in classrooms equipped with multimedia tools such as PC, projector, internet connection, using PowerPoint
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	<p>slides. Frontal teaching is the exclusive teaching method, because of the role of module within the course of studies, linked exclusively to the acquisition of knowledge.</p> <p><b>Statistics module:</b> The theoretical lessons are held in the classroom, using personal computers connected to a projector to show slides and possibly explanatory videos to support the explanation. The exercises are always held in the classroom with the possibility for each student to use their own PC (possibly setting up small working groups of 2 or 3 students) or the whiteboard for the resolution of the exercises.</p> <p><b>Physics module:</b> Explanation of the topics through slide projection, resolution of exercises on the board and related discussion during the lectures. E-learning methods will only be used in the event of a health emergency.</p> <p><b>Informatics Module:</b> Lectures and practical activities (guided exercises) also in e-learning environments.</p>
<p><b>Expected Learning Outcomes</b></p>	<p><b>Note:</b> Knowledge, abilities, and competences that the students will acquire through the present teaching are related to the Day One Competences (DOC) adopted by the ECCVT on 26/03/2015 (<a href="https://www.eaeve.org/fileadmin/downloads/eccvt/2015_2_D1C_Adopted_Annex_5.4.1.pdf">https://www.eaeve.org/fileadmin/downloads/eccvt/2015_2_D1C_Adopted_Annex_5.4.1.pdf</a>)</p>
<p><b>Knowledge and understanding on:</b></p>	<p>At the end of the course, the student will acquire knowledge and understanding skills:</p> <ul style="list-style-type: none"> <li>○ <b>Agricultural economics:</b> Ability to understand the basic principles of economics that govern the behavior of individuals and markets.</li> <li>○ <b>Statistics:</b> Adequate knowledge to identify the usefulness of statistical analysis as a tool for understanding phenomena.</li> <li>○ <b>Physics:</b> Knowledge of the basic principles related to the topics of classical physics and ability to solve physics problems.</li> <li>○ <b>Informatics:</b> Acquire a basic culture in regard to computer methods for information processing.</li> </ul>
<p><b>Applying knowledge and understanding on:</b></p>	<p>By the end of the teaching period, students are expected to be able to:</p> <ul style="list-style-type: none"> <li>● <b>Agricultural economics:</b> Ability to interpret the main economic phenomena. Ability to analyze the behavior of individuals and firms. Ability to describe the functioning of agri-food markets. (DOC 2.11)</li> <li>○ <b>Statistics:</b> Ability to build reports, use data and interpret the main phenomena by applying the basic knowledge in the zootechnical field or in pets (in synergy with the skills acquired in other disciplines. (DOC 2.1).</li> <li>○ <b>Physics:</b> Knowledge of the main laws of physics, necessary basis for the study of the scientific disciplines of the Course of Study and ability to interpret the crucial principles of classical physics and to apply them in the field of veterinary medicine. (DOC 2.1).</li> <li>○ <b>Informatics:</b> Knowledge of the principles, methodologies and techniques for managing digital documents.</li> </ul>
<p><b>Transversal Competences</b></p>	<ul style="list-style-type: none"> <li>○ <i>Autonomy of judgment</i> <ul style="list-style-type: none"> <li>○ <b>Agricultural economics:</b> Ability to identify suitable solutions to improve the competitiveness of agri-food products. Ability to identify obstacles and threats to competitive positioning of agri-food companies in the market.</li> <li>○ <b>Statistics:</b> Ability to identify the most suitable statistical techniques in the study of a given phenomenon.</li> <li>○ <b>Physics:</b> At the end of the course, the student should be able to interpret and discuss the main laws of physics and to use them to own advantage in the field of veterinary medicine.</li> <li>○ <b>Informatics:</b> Collect and evaluate data related to cultural or social phenomena thanks to a correct research methodology, which makes a conscious use of computer tools, and acquired data analysis skills.. Critically evaluate processing methodologies and techniques in relation to scope and</li> </ul> </li> </ul>

	<p>purpose. Critically assess the implications of technologies and marketability in a professional environment.</p> <ul style="list-style-type: none"> <li>○ <i>Communicative skills</i> <ul style="list-style-type: none"> <li>○ <b>Agricultural economics:</b> Ability to describe economic phenomena and mechanisms underlying business choices and market dynamics, using an appropriate technical language.</li> <li>○ <b>Statistics:</b> Ability to describe, represent and interpret data for a more in-depth analysis of the phenomenon.</li> <li>○ <b>Physics:</b> The student should acquire the skills and correct scientific terminology in order to properly discuss the basic concepts of classical physics.</li> <li>○ <b>Informatics:</b> Identify tools of communication of cultural content appropriate in relation to real innovative contexts. Interact effectively with device and software for problem solving.</li> </ul> </li> <li>○ <i>Ability to learn autonomously</i> <ul style="list-style-type: none"> <li>○ <b>Agricultural Economics:</b> Ability to deepen and update their knowledge, to acquire data and information on business choices and the optimal allocation of resources.</li> <li>○ <b>Statistics:</b> Ability to understand phenomena in order to extrapolate useful information and carry out insights for the formulation of predictions on repeated events.</li> <li>○ <b>Physics:</b> The student should acquire the ability to improve his knowledge independently through further studies, more advanced courses and putting into practice in the field of veterinary medicine the notions of physics learned.</li> <li>○ <b>Informatics:</b> Understanding new technologies and their potential</li> </ul> </li> </ul>
ECCVT Day One Competences (adopted on 26/3/2015) linked to the present Integrated Teaching	<p><b>Knowledge:</b> 2.1 2.11</p>

<b>Assessment and Feedback</b>	
Methods of assessment	<p>The exam of the integrated course of "Economics and Statistics" allows the acquisition of 11 of the CFUs provided by the study plan. The exam includes a partial test of the modules of "Statistics" and "Physics", and a subsequent one of "Agricultural Economics" and "Computer science". The two partial tests can be taken in the same session or in different sessions but always in the same order. The ECTS (11) are considered acquired only after passing the two tests and registration on the ESSE3 portal of the report.</p>
Evaluation criteria	<p>During the examination procedure, students will have to demonstrate:</p> <ul style="list-style-type: none"> <li>○ <i>Knowledge and Understanding:</i> <ul style="list-style-type: none"> <li>○ Agricultural economics: Ability to clearly describe the basic models of economic phenomena.</li> <li>○ Statistics: Demonstration of having acquired the basic concepts for an adequate statistical analysis of the phenomena.</li> <li>○ Physics: Knowing the main laws and notions of classical physics and solving problems of classical physics</li> <li>○ Informatics: knowing the fundamental concepts of the world of information technology; knowing the structure of a computer.</li> </ul> </li> <li>○ <i>Applying knowledge and understanding:</i> <ul style="list-style-type: none"> <li>○ Agricultural economics: Ability to describe market phenomena and the behaviors of individuals and enterprises in the situations that currently characterize the agri-food sector, bringing them back and interpreting them in the light of</li> </ul> </li> </ul>



	<p>previous models</p> <ul style="list-style-type: none"> <li>○ Statistics: Knowing the methodology of data collection and use, tabular and graphic representation, ability to calculate indices, description of the most used statistical distributions.</li> <li>○ Physics: Applying the notions of physics learned in the field of Veterinary Medicine</li> <li>○ Informatics: Acquisition of basic computer skills and competence ability to use IT tools; ability to use spreadsheets, build graphs; ability to navigate websites, use databases and carry out bibliographic searches.</li> </ul> <ul style="list-style-type: none"> <li>○ <i>Autonomous judgement:</i> <ul style="list-style-type: none"> <li>○ Agricultural economics: Ability to identify improvement paths and tools to increase the competitiveness of agri-food businesses</li> <li>○ Statistics: Ability to identify the most appropriate statistical tool for the study and interpretation of the phenomenon of interest.</li> <li>○ Physics: Being able to independently identify which law, formula or notion to use to solve and interpret a classical physics problem.</li> <li>○ Informatics: Demonstrate IT skills and competence, autonomously evaluating the best solution to problems.</li> </ul> </li> <li>○ <i>Communication skills:</i> <ul style="list-style-type: none"> <li>○ ability to present the topics studied</li> <li>○ ability to explain their own reasonings and points of view in a clear and logical way</li> <li>○ ability to use the scientific and technical terminology properly</li> </ul> </li> <li>○ <i>Autonomous and continuous learning:</i> <ul style="list-style-type: none"> <li>○ Agricultural economics: Ability to critically analyze concrete situations in the economic theme, in an autonomous way, also identifying additional sources of deepening and updating</li> <li>○ Statistics: Ability to find sources of available data and make appropriate insights to extrapolate useful information to make comparisons, demonstrating ability to interpret phenomena for the formulation of predictions on repeated events.</li> <li>○ Physics: Answering questions/themes/s correctly</li> <li>○ Informatics: knowing how to communicate with basic IT terminology; demonstrate expository clarity, ability to analyze and synthesis; have command and punctuality of the vocabulary.</li> </ul> </li> </ul>
<p>Criteria for assessment and attribution of the final mark</p>	<p>The mark of each single partial test is the average of the marks obtained in the single modules; the final mark is the result of the collective judgment of the two partial tests The final mark of the integrated exam is given out of thirty. Honors will be awarded to the student who obtains the maximum score in the various tests.</p>
<p><b>Additional information</b></p>	