ACADEMIC YEAR 2023/2024

General information	
Name of the integrated course	**INFECTIOUS DISEASES 2**
Integrated teaching modules	**Bacterial Infectious Diseases** **Epidemiology and Veterinary Law (Animal Health)** **Avian Pathology**
Degree course	Single cycle degree in Veterinary Medicine (LM-42)
Academic Year	3rd
European Credit Transfer and Accumulation System (ECTS):	11 (8 ECTS lectures ;+ 3 ECTS practical activities)
Language	Italian
Period of teaching	Bacterial Infectious Diseases: 3rd 7 week period Epidemiology and Veterinary law (Animal Health low) and Avian Pathology: 4th 7 week period
Attendance	Mandatory

Professors/Lectures Name and Surname	**e-mail address**	**Telephone**
Domenico Buonavoglia	domenico.buonavoglia@uniba.it	080 5443818
Grazia Greco	grazia.greco@uniba.it	080 5443818
Antonio Camarda	antonio.camarda@uniba.it	080 5443910

Headquarters	Campus of Veterinary Medicine, S.P. 62 per Casamassima Km 3, 70010 Valenzano
Virtual headquarters	Microsoft Teams platform (access code to be asked to the teachers)
Tutoring (time and day)	**Prof. Domenico Buonavoglia:** Tuesday, 10.00 to 13.00; Friday 13.00 to 15.00 **Prof. Grazia Greco:** Monday-Wednesday: 12.30-13.30; Thursday:14.30-16.30 **Prof. Antonio Camarda:** Monday, Wednesday, Friday: 12.00-13.30; Tuesday, Thursday: 16.00-17.00

Syllabus	
Learning Objectives	The objective of the "Infectious diseases 2" integrated course is to transfer the knowledge concerning the main infectious diseases of poultry, and the bacterial infectious diseases of domestic animals. Furthermore, a module of the Course is focused on the epidemiology and veterinary law. The etiology, the pathogenesis, the clinical signs, the pathological lesions, the diagnosis and prophylaxis of the main diseases of domestic animals and poultry will be acquired. The student, will acquire diagnostic skills, including correct approaches to the clinical signs and the pathological lesions, the diagnostic procedures including laboratory methods. Based on the present course, the Day-One Veterinary Medicine graduate will be able to perform the basic duties of the veterinarians operating in the Veterinary Services of the Animal Health (Document "ECCVT Day One competences" points 1.3,1.4, 1.6, 1.8, 1.13, 1.21, 1.22, 1.24,1.28, 1.36, 2.2, 2.5, 2.7, 2.9-2.10). The course provides basic notions of veterinary epidemiology aimed at understanding the natural history of reportable diseases (frequency, distribution, risk factors and

	transmission mechanisms). In addition, the course provides the basis for: designing epidemiological studies; describing and analysing the causes of a disease; designing experimental studies aiming at evaluating the effectiveness of control measures; designing animal health control programs based on scientific evidence. The veterinarians must also be able to evaluate the diagnostic techniques applicable to the medical-veterinary decision-making process and develop skills in Veterinary Public Health for the prevention and control of diffusive infectious diseases according to the International Animal Health organizations (WOAH) and the Regulations of UE and Italy Health Minister.
Course prerequisites	Compulsory prerequisites: Infectious Diseases 1 The student must have previous knowledge on statistics, microbiology, host-pathogen interaction, and diagnostic techniques of viral and bacterial infectious diseases of domestic animals.
Contents of the teaching module: **BACTERIAL INFECTIOUS DISEASES** Teacher: **Domenico BUONAVOGLIA** **Lectures:** **ECTS:2** **Hours: 26** **Practical activities for the integrated module (laboratory, working groups, seminars):** **ECTS: 1** **Hours: 15**	**Clinical sciences of companion (dog, cat and horse) and food-producing (bovine, sheep, goat and swine) animals**: Knowing about etiology-pathogenesis, epidemiology, symptomatology, diagnosis, prophylaxis and terapy about the main bacterial infectious diseases of animals: Glanders and Melioidosis, Rhodococcus equi infection, Strangles, Contagious Equine Metritis, Clostridiosis (Tetanus, Botulism, Gas Gangrene, Enterotoxemias), Listeriosis, Infectious Mastitis of Ruminants, Contagious Agalactia, Enzootic Abortion of Ewes, Coxiella burnetii infection/Q-Fever, Contagious Bovine Pleuropneumonia, Brucellosis, Antrax, Tuberculosis, Johne's Disease, Dog Ehrlichiosis, Leptospirosis, Salmonellosis, Atrophic rhinitis, Erysipelas in swine, Enzootic Swine Pneumonia, Escherichia coli Diseases Biosafety measures for the control of the biological risks in the isolation unit (Isolation Unit of the Veterinary teaching hospital). Implementation of therapeutical protocols against the most common infectious diseases of companion and food-producing animals. Sampling of companion and food-producing animals for the diagnosis of infectious diseases. Implementation of hygienic measures and vaccination protocols against infectious diseases in kennels (MAPIA shelter), horse stables and cattle farms. Laboratory diagnosis of infectious diseases of companion and food-producing animals. Interpretation of serological assays.
Contents of the teaching module: **EPIDEMIOLOGY AND VETERINARY LAW (ANIMAL HEALTH LOW)** Teacher: **Grazia GRECO** **Lectures:** **ECTS: 3** **Ore: 39** **Practical activities for the**	**The module pertains to the areas 1) Basic sciences (epidemiology) and 2) Food safety and quality, veterinary public health and One Health (Vet legislation).** Introduction to veterinary epidemiology in the field of Animal Health. Disease determinants and risk factors. Koch's postulates. Multifactorial Diseases and Evan's Postulates. Descriptive epidemiology. Measures of disease occurrence in populations: prevalence, incidence, morbidity, mortality, lethality, survival, reproduction rate (R0). Describing disease occurrence: epidemic, pandemic, endemic and sporadic disease. Analytical and experimental epidemiology. Data analysis in epidemiology. Association and causality measures. Statistical and biological significance. Sampling aiming at determining / excluding disease in populations: size, estimate precision and confidence interval (CI). Sampling types: simple random, stratified random, systematic, clustered. Performance of diagnostic tests: sensitivity, specificity and predictive values; in series and parallel tests. **Practical activities**: each of the theoretical units is coupled with practical

integrated module (laboratory, working groups, seminars): **ECTS: 1** **Hours: 15**	activities/seminars aimed at acquiring, consolidating and self-assessing skills useful for carrying out epidemiological investigations through the use software (Microsoft Excel and others available). **Specific competences in Animal health**. Legislation sources: International (WOAH), European Union and Italy lows. International Veterinary Public Health Organizations (WOAH, EFSA, European Commission). National Veterinary Services. Measures aimed at controlling diffusive animal diseases: animal databases (BDN); identification of farms and livestock animals (cattle, horses, sheep and goats, pigs). National and international movements for trade: certifications, controls, and authorities in charge. UVAC, PIF. Trade of dogs, cats and ferrets. Bio-security. and Regulatory legislation in the field of reportable diffusive infectious diseases (WAOH: Terrestrial Animal Health Code Art. 1.1.3; 2) Reg. 429/2016 UE; and additional Regulations: R.I UE 2018/1882, R.D. UE 2018/1629, R.D. UE 2020/689, D. lvo 136, 2022). Notification Procedures. Main epidemic-surveillance networks: RASFF, TRACES, VET.INFO, SIMAN, SANAN, SINZOO, WHAID, ADSN. Territorial restriction measures. Communicable infectious diseases at country, European Union and International level. Zoonotic diseases under notification. National and International Plans for Prevention and Control of single diseases: Bovine and buffalo TBC; bovine and buffalo, ovine and caprine brucellosis; Paratubercolosi; Swine vesicular disease; Classical and African Swine fever, Transmissible encephalopathies of cattle, sheep and goats, Equine Infectious Anemia; West Nile disease, Bluetongue (Blue Tongue); Rabies. Infectious diseases of aquatic animals. Zoonoses.
Contents of the teaching module: **AVIAN DISEASES** Teacher: **Antonio CAMARDA** **Lectures:** **ECTS: 3** **Ore: 39** **Practical activities for the integrated module (laboratory, working groups, seminars):** **ECTS: 1** **Hours: 15**	***The contents of the course pertain to the area of Clinical Sciences of food-producing animals and, more marginally, to the area of clinical sciences of pets. The topics covered are as follows:*** ***Lessons*** ○ *Introduction to the course.* ○ *Organization of the poultry sector and related sanitation issues* ○ *Biosecurity. Definitions and application in intensive farming* ○ *Avian Influenza* ○ *Infectious Laryngotracheitis* ○ *Newcastle Disease* ○ *Infectious Bronchitis* ○ *Fowl Pox* ○ *Gumboro Disease* ○ *Avian Adenovirus Infections; EDS 76; Avian Encephalomyelitis* ○ *Marek's Disease* ○ *Malabsorption Syndrome* ○ *Running Stunting Syndrome* ○ *Avian Coccidiosis, prophylaxis strategy in intensive farming* ○ *Avian Salmonellosis: Fowl Typhoid and Pullurosis* ○ *Avian Salmonellosis: Paratyphosis* ○ *Avian Cholera* ○ *Mycoplasmosis* ○ *Avian Colibacillosis and Clostridiosis* ○ *Avian Anemia* ○ *Avian Chlamydiosis* ○ *Clostridiosis* ***Practical Activities:***

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	Poultry management. Morphological and Evaluation of chickens Clinical exam of birds; Biosecurity in poultry farms: Exam of skin and plumage; detection of injuries; ○ Necroscopic examination of poultry and birds ○ The exam of the sinuses and the first airways, sinuses, larynx, pharynx and trachea ○ The deep respiratory apparatus and respiratory diseases ○ The digestive apparatus and related diseases ○ The urogenital system of poultry and related diseases ○ The cardio-circulatory apparatus and related diseases (Sudden death disease; ascites syndrome; Oregon Syndrome) ○ The lymphoid system and related diseases. ○ Sampling techniques: Methods of collection, storage and manipulatuion of samples ○ Necropsy findings and diagnostic hypotheses
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Biosafety rules for the attendance of practical activities.	Access to laboratories, stables, necropsy room, and isolation unit of the veterinary teaching hospital will be allowed only to students wearing protective clothing (disposable coats and gloves and, when required, footwear also), after reading the biosafety manual.

Self study materials	
Books and bibliography	**Avian Pathology Subject** - Appunti dalle lezioni - Asdrubali G., Fioretti, A. Manuale di Patologia Aviare, Ed. Point Veterinaire Italie , 2010 - Diseases of Poultry, 13th Edition- David E. Swayne (Editor-in-Chief), J. R. Glisson (Associate Editor), L. R. McDougald (Associate Editor), L. K. Nolan (Associate Editor), D. L. Suarez (Associate Editor), V. L. Nair (Associate Editor) Wiley-Blackwell, 2013 - Calnek B.W. Barnes H.J., Beard C.W., Mc Dougald L.R. and Saif Y.M. Patologia Aviare, 10 edizione, Ed. Piccin, 2001. - Pattison M., McMullin P., Bradbury J., Alexander D., Poultry Diseases, 6th Edition. Saunders Ltd, 2007. - Randall C.J. A Colour Atlas of Diseases and Disorders of Domestic fowls and Turkeys. Mosby, 1990. Link utili **Bacterial Infectious disease subject** - Malattie Infettive degli animali. A cura di Fadda M., Cuteri V., D'Allara P., Iovane G., Mrsilio F.. Edizione Point Veterinaire italie. 1^ Edizione gennaio 2023Quinn P.J., Markey B.K., Carter M.E. *et al*. - *Veterinary Microbiology and Microbial Disease.* Blackwell Science, Oxford UK, 2011 - R. Farina, F. Scatozza, Trattato di malattie infettive degli animali, Torino, UTET, 1998. **Epidemiology and Veterinary Legislation (Animal health low)** - E. Bottarelli, F. Ostanello Epidemiologia. Teoria ed esempi di medicina veterinaria Edagricole, Milano, 2011, ISBN-978-88-506-5347-8

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	- - A. Villarroel, Practical Clinical Epidemiology for the Veterinarian, First Edition. © 2015 John Wiley & Sons, Inc. Published 2015 by John Wiley & Sons, Inc. - M. Thrusfield, Veterinary Epidemiology, Blackwell Science Ltd, Oxford, 3 edition, 2007. - S. Montinaro, Sanità animale. 2° ed., 287 pagg., Poletto Editore, Edizione 2021,: ISBN: 9788895033938 - Animal health law: il nuovo regolamento di polizia veterinaria a cura di: C. Benazzi, G. Martini, Esculapio Ed., EDIZIONE 2023, ISBN: 9788893853866 -
Additional materials	The additional teaching material will be provided by teachers at the beginning of the course and will be available in the Microsoft Teams platform. - https://www.woah.org/en/home/ - https://www.vetinfo.it - https://www.quadernodiepidemiologia.it/epi-mobile/libro/present.htm - http://partnersah.vet.cornell.edu/avian-atlas/#/ - http://www.thepoultrysite.com/diseaseinfo/

Work shedule			
Hours			
Total	Lectures	Hands on (laboratory, working groups, seminars, field trips)	Out-of-class study/self-study hours
275	104	45	126
ETCS			
11	8	3	NP

Teaching strategy	**Modules of Avian pathology and bacterial infectious diseases** The teaching activities will consist of lectures the twill be enhanced with active learning methods, such as problem solving, case studies and role play, in order to implement the knowledge and increase the learning ability. The complete teaching process will be implemented with the aim of iconic, verbal and graphic communication models, taking advantage of the available teaching resources and technologies. Self-learning activities will be also realized through audiovisual materials and footages that will be uploaded on Microsoft Teams, as well as by means of self-evaluation tests elaborated by the teachers. During the practical activities, a greater weight will be attribute to the problem solving and learning by doing in order to improve the acquisition of skills and competences. The practical activities will be performed in the fully equipped laboratories of the Section of Infectious Diseases, in the stables, in the necropsy room of avian diseases and in the Isolation Unit of the Department, as well as in kennels/shelters, horse stables and cattle farms. Small groups of students (maximum 8-10 students per group), supervised by the teachers and their collaborators, will participate to clinical visits and will take and analyze clinical samples, performing individually or in small groups the diagnostic procedures in the lab and discussing the results with the teachers and their collaborators. Each student will individually carry out the practical activities and discuss the results with the teacher and/or his collaborators.

	Module of Epidemiology and Veterinary law (Animal health Low) The course consists of theoretical lectures and practical works in lab room. The *in-class* lessons are performed in classrooms equipped with multimedia tools such as PC, projector, internet connection, using PowerPoint slides and networking with sites of National and International Health Organizations. Practical works are carried out in the lab room. For training activities, the students will work in student groups (n. less than 3 groups). Each student is required to perform 1) exercises on topics related to theoretical activities; 2) self-assessment exercises and questionnaires administered during the course (as *blended learning* on Teams platform); 3) a project (in cooperation with other 5-6 students) with value of *self-assessment* e *flipped-classroom.* For the field training, the students must be protected by lab coat, gloves, mask and shoe's gloves. To attend to the lab room, students need to have a personal notebook including the Microsoft Office package (individual patent is available on ESSE3 platform).

Expected learning outcomes	
Knowledge and understanding on:	At the end of the course, the student will acquire knowledge and understanding of: • etiology, pathogenesis, clinical signs, diagnosis and treatment of infectious diseases of the most common animal species (DOC 2.5) • principles of the prophylaxis of infectious diseases (DOC 2.9). • veterinary public health, with reference to diffusive animal diseases (animal health), and zoonoses (DOC 2.10) • the environment and procedures useful to veterinarians who deal with Animal Health (Area A) or the main indicators of disease frequency and measures of association, causal reasoning, risk analysis; performance of diagnostic tests; sampling criteria, disease-free certificates. • learning of software useful for the indicated purposes. • organization and functions of epidemic surveillance networks • Italian, EU and international veterinary organizations (Servizi Veterinari) and their interactions with the related regulatory bases. • Plans for the prevention, control and eradication of diffusive infectious diseases, in agreement with national, European Union and World Organization for Animal Health (WAHO) regulations (DOC 1.36)
Applying knowledge and understanding on:	At the end of the course, the student should be able to: • Correctly apply the principles of biosecurity in farms (DOC 1.28) • Choice of appropriate diagnostic methods according to the objectives: collect, store and transport samples, select appropriate diagnostic tests, interpret and understand the limits of the test results (DOC 1.21) • Diagnose infectious diseases, especially notifiable ones, and take appropriate action, including notification to competent authorities (DOC 1.24) • Communicate effectively with referral and diagnostic services, including providing an appropriate medical history (DOC 1.22) • Provide advice and implement appropriate control measures, prevention and eradication programs according to animal welfare and public health standards (DOC 1.36) • reporting and notification of diffusive disease, movement restrictions (DOC 2.7).

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	• Conducting epidemiological surveys at the population level; graphic representation of the frequency of diseases; • interpretation of descriptive statistical data, frequency estimation of diseases, with particular attention to diffusive ones; risk analysis aimed at planning prevention and control measures (DOC 1.3; 1.15; DOC 2.2, 2.10).
Soft skills	**Autonomy of judgment** **The student will be able:** • to review and evaluate literature and presentations critically (DOC 1.8). • to have competence in the logical approaches to both scientific and clinical reasoning. The student will be able also to distinguish between the two, and recognize the strengths and limitations of each (DOC 2.1) • To be able to analyze with a critical approach the operating procedures of a process (diagnostic, preventive, therapeutic, etc.) • To be able to propose adequate solutions to problematic situations **Communication skills** The student will be able • To Work effectively as a member of a multi-disciplinary team in the delivery of services (DOC 1.6.) • To Communicate effectively with clients, Animal Health authorities and animal keepers. using language appropriate to the audience concerned and in full respect of confidentiality and privacy (DOC 1.4) **Capacity of self-learning** The student will demonstrate an ability of lifelong learning and a commitment to learning and professional development. This includes recording and reflecting on professional experience and taking measures to improve performance and competence (DOC 1.13).
Summary of the knowledge and competences that the integrated course concurs to let the students acquire (Day One Competences) as scheduled by EAEVE	***Knowledge:*** 2.1 2.2 2.5 2.7 2.9 2.10***Competences:*** 1.3 1.4 1.6 1.8 1.13 1.15 1.21 1.22 1.24 1.28 1.36

Assessment and feedback	

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Methods of assessment	The exam of the integrated course "Infectious diseases 2" allows the acquisition of 11 ECTS of those included in the study plan. The exam consists of partial examinations for the three modules forming the course, i.e., "Bacterial Infectious diseases", "Epidemiology and veterinary legislation" and "Avian Pathology". The ECTS will be obtained after the positive outcome of the three partial examinations and the registration of the final outcome in the ESSE3 platform.
Evaluation criteria	***Knowledge and understanding ability:*** The verification of results will be performed: - during the course by means of: i) flip teaching sessions during which the autonomy of judgement of the student and his/her ability to take advantage of the previously acquired knowledge will be evaluated; ii) a written exam *in itinere*, consisting of a multiple-choice questionnaire regarding topics of the lectures (a single correct answer has to be selected per each question). <u>Modules of Bacterial Infectious diseases and Avian Diseases:</u> - a final oral examination will be performed at the end of the modules. The skills detailed in the teaching course's objectives will be assessed. The exam will be passed after the correct discussion of at least two topics for each module of the programme. - <u>Module of Epidemiology and Veterinary law</u> The assessment of the knowledge, skills and abilities takes place through written examinations consisting of: 1) multiple exercises covering epidemiology subjects by using Excel spreadsheets; to perform these tasks students will receive a set of data related to a disease or disorder of an population from which students will have to find causation, identify which factors are influencing, statistically prove and report recommendations adequate to solve the problem. Students that fail this component will not be able to apply for the second part. 2) solving of a questionnaire including questions, based on multiple choice (50%) / open answers (50%), on both Epidemiology and Animal Health subjects. Evaluation methods: for each wrong answer (multiple-choice questions) there will be a penalty; for open questions, the consistency of the answers with the questions, the clarity of presentation and the ability to summarize will be assessed. Each test must be passed with a grade of at least 18 out of 30. ***Applied knowledge and understanding ability:*** - Ability to connect different topics and use appropriate examples - Ability to evaluate a clinical picture and elaborate a diagnostic algorithm - Ability to critically evaluate different control strategies and vaccine prophylaxis ***Autonomy of judgment:*** - Analytical skills and critical sense with respect to the studied topics - Ability to express a comprehensive and uniform evaluation of the most common clinical and epidemiological features of food-producing and companion animals ***Communication skills:*** - Ability and clarity of speech - Appropriateness of expression, with particular regards to the specialised terminology

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	Capacity to continue learning: - Ability to elaborate the notions and transfer them to new and differentiated situations
Criteria for assessment and attribution of the final mark	The outcome of the partial examinations of "Bacterial Diseases", "Epidemiology and Veterinary legislation" and Avian Diseases" will contribute to assign the final marks of the teaching module "Infectious Diseases 2 The final mark is the result of a collegial evaluation of the all partial examinations, during which the student must demonstrate to have acquired critical sense in relation to the topics of the course. The final assessment, expressed in thirties, will be passed with marks equal or greater than 18 and will be made on the basis of the correctness of the answer, the communication skills, the clarity of the presentation, the disciplinary competence, and the level of detail.
Additional informations	The Attendance to the practical classes is compulsory.

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