General Information	
Academic subject	Zoology (I.C. Basic principles of plant and animal biology)
Degree course	Bachelor programme: Food Science and Technology (L26)
ECTS credits	3 ECTS
Compulsory attendance	No
Teaching language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Eustachio Tarasco	eustachio.tarasco@uniba.it	AGR/11

ECTS credits details		
Basic teaching activities	2 ECTS Lectures	1 ECTS Laboratory classes

Class schedule	
Period	II semester
Course year	First
Type of class	Lecture - workshops

Time management	
Hours	75
In-class study hours	30
Out-of-class study hours	45

Academic calendar	
Class begins	March 4th, 2019
Class ends	June 14th, 2019

Syllabus	
Prerequisites/requirements	
Expected learning outcomes	*Knowledge and understanding* ○ Knowledge and understanding on the basic aspects concerning the biology of the animals *Applying knowledge and understanding* ○ Ability to distinguish the fauna composition which could be involved in the activities related to production, transformation, storing, distribution and marketing of food by means of scientific observations *Making informed judgements and choices* ○ Ability of understanding biological, ethological and ecological phenomena which allow the success of the injurious animals in the considered context ○ Ability of application of treatments able to limit the development of injurious animals in the considered context *Communicating knowledge and understanding* ○ Ability of description of the animals and biological, ethological and ecological phenomena involving the animals in the considered context *Capacities to continue learning* ○ Ability of updating the own knowledge on the animals and the biological, ethological and ecological phenomena involving the animals in the considered context The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Degree in Food Science and Technology (expressed through the European Descriptors of the qualification)

Contents	Histology. Structures involved in nutrition, food uptake and digestion; trophic relationships (trophic levels, chain, pyramid and net). Respiration and gas exchange (by means of integument, tracheae, gills, lungs). Body fluid circulation and involved structures; blood and haemolymph; respiratory pigments. Excretion, osmoregulation and involved structures. Nervous tissue and system, sensorial organs and perception. Integument and its derived structures, skeleton; locomotion (muscular tissue). Structures involved in the reproduction. Reproductive modalities and strategies: agamic and agametic (schizogony, gemmation, fragmentation, polyembryony) and gametic reproduction; gonocorism and hermaphroditism; gametogenesis, egg and spermatozoa morphology; amphigony, fecundation and parthenogenesis. Oviparous, ovoviviparous and viviparous organisms. Sex determination (progamic, syngamic, metagamic). Egg classification, embryonic and postembryonic development (direct and indirect; continuous and discontinuous; allometry). Neoteny. Simmetry and metamery. Sexual dimorphism, polimorphysm. Evolutionary theory and adaptation. Concept of species. Innate and acquired behaviour. Mutualistic and antagonistic symbiosis. Communication and social behaviour (mating, aggression, parenting). Animal adaptations: communications, foberism, mimetism. Dispersal mechanisms within the space (active, passive, migration) and time (diapause, quiescence, hibernation and aestivation). Zoogeographic areas. Biotope, biocoenosis, populations, population density and dynamics, biotic potential, natural ecosystems, agroecosystem. Phyla of pests in agriculture – Main details of the main animal Phyla with details of the a few species of economic and sanitary interest: Platyhelminthes; Nematoda; zoophagous and food stored Acarina: biology, damages, control; Mammalia Rodentia (Muridae): biology, damages, control. Practical classes – Means, tools and instruments for investigations; methods of collecting and preserving zoological materials; basic principles of breeding certain animal groups in the laboratory; identification of the main animal taxa.
Course program	
Reference books	• Notes of the lectures • De Bernardi et al., 2012 – Zoologia (general part) – Idelson-Gnocchi (In alternative: Mitchell L.G., Mutchmor J.A., Dolphin W.D., 1992 – Zoologia. Zanichelli Ed., Bologna; or Dorit R.L., Walzer W.F., Barnes D., 1997 – Zoologia. Zanichelli Ed., Bologna) • Suss L., Locatelli D.P., 2001 - I parassiti delle derrate (Il Sole 24 ore Edagricole, Bologna) Study schemes: • presentations and other didactic material provided during the lessons Additional readings: • Baccetti B., Barbagallo S., Suss L., Tremblay E., 2000 – Manuale di Zoologia agraria. A. Delfino Ed., Roma. • Chapman J.L., Reiss M.J., 1994 – Ecologia. Principi e applicazioni. (chapters 2.1÷2.3, 4.1÷4.6, 5.1÷5.28, 13.8, 18.1÷18.2, 19) Zanichelli Ed., Bologna. • Pellizzari Scaltriti G., 2002 – Parassitologia animale dei vegetali.

	CLEUP Editore. For foreign students (LLP-Erasmus, Tempus, etc.): Integrated principle of Zoology (Cleveland et al., 2005, McGraw-Hill).
Notes	
Teaching methods	The subjects will be provided with several examples and illustrations by means of Power Point presentations, movies, practical drills in the classroom and laboratory 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. Through the ATutor digital platform, students can have access to evaluation tests by means of which they can test their level of learning and knowledge. On the same site, students can use the "Forum" function in order to interact among them and with the teacher.
Evaluation methods	The exam consists of a written and 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). 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. 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. Non-Italian students may be examined in English language, according to the aforesaid procedures.
Evaluation criteria	*Knowledge and understanding* ○ Description of the basic morphological, biological, ecological and ethological characteristics of the animals and interpretation of their functional correlations *Applying knowledge and understanding* ○ Description of the factors favouring the success of the different ecological classes of the animals *Making informed judgements and choices* ○ Formulation of potential treatments on the factors favouring the success of injurious animals within a productive and market context related to the food chain *Communicating knowledge and understanding* ○ Exhaustive description and illustration, with appropriateness of term, richness of examples and correlation of the basic aspects which favour the success of the animals *Capacities to continue learning* ○ Adaptation of the basic cognitive tools acquired during the module in order to explain and solve numerous applied problems and diversified case of study
Receiving times	Monday-Friday by previous agreement by e-mail