UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze della Terra e del Mare
ACADEMIC YEAR	2020/2021
MASTER'S DEGREE (MSC)	ANALYSIS AND ENVIRONMENTAL MANAGEMENT
SUBJECT	DEFENCE SYSTEMS AND ANIMAL WELLBEING
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50576-Discipline biologiche
CODE	20540
SCIENTIFIC SECTOR(S)	BIO/05
HEAD PROFESSOR(S)	CAMMARATA MATTEO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	94
COURSE ACTIVITY (Hrs)	56
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**CAMMARATA MATTEO** Monday 09:00 11:30 Viale delle Scienze ED 16 Dipartimento della terra e del mare

PREREQUISITES	Zoology basic knowledge
LEARNING OUTCOMES	Knowledge and comprehension. The student will acquire the skills and will learn the methods to observe, describe and study all the component of animal Welfare . Applying Knowledge and comprehension. The student will also develop the capacity of deeply understand the specific literature presenting the most recent researches on animal welfare. This ability will be encouraged by projecting examples of recently published papers during the classes. Autonomous thinking Targeted questions will be posed during classes. This will lead the student to the ability required for critically discuss his/her own observations and the conclusions derived. Communication ability. Ability to be clear presented and properties Language skills aquired and to disclose with scientific strictness. Aquisition of the relational capacity indispensable to collaborate in multidisciplinary studies in the laboratory and in the field. Learning ability. All the activities described above will allow the acquisition of the methodological tools necessary for the student to prosecute his/her studies or to apply his/her competences in a workplace and to autonomously perform indispensable updates.
ASSESSMENT METHODS	EXAM: midterm and final oral exam. The student will be evaluated based on the level of knowledge of the subjects and the ability to link between them, the clarity and the use of a specialized scientific language. EVALUATION CRITERIA -assessment: excellent, grade: 30 - 30 cum laude, excellent knowledge of the topics of the course, excellent use of language, excellent analytical capacity, ability to apply knowledge to problem solving; - assessment: very good, grade: 26-29, good knowledge of the topics of the course, correct use of language, good analytical capacity, ability to apply knowledge to problem solving; - assessment: good, grade: 24-25, good knowledge of the main topics of the course, correct use of language, limited ability to autonomously apply knowledge to problem solving; - assessment: satisfactory, grade: 21-23, partial knowledge of the topics of the course, satisfactory use of language, limited ability to autonomously apply knowledge to problem solving; - assessment: sufficient, grade: 18-20, minimal knowledge of the main topics of the course and of technical language, scarce ability or inability to autonomously apply knowledge to problem solving; - assessment: fail, insufficient knowledge of the topics of the course.
EDUCATIONAL OBJECTIVES	To provide the student of the knowledge and the skills required for the observation, the description and the analysis of the processes associated with the immune and stress response including the metazoan behavior. To provide the student of the proper and technical language. To update the student on the state-of-art of the most relevant topics for the study and applications in stress responses and animal welfare and immunobiology responses describing the recent, relevant and most cited articles will be presented during classes.
TEACHING METHODS	48 hours of lectures in classroom. Reading materials and slides of lecture presentations will be provided in course.
SUGGESTED BIBLIOGRAPHY	Alcock John ETOLOGIA Zanichelli Il mestiere dell'etologo. Danilo Mainardi. Bompiani Perche' alle zebre non viene l'ulcera. Robert M. Sapolsky Compendio di immunobiologia Comparata. Ottaviani. Piccin. Materiale didattico incluse le presentazioni distribuito dal docente

SYLLABUS

Hrs	Frontal teaching
10	Cases of natural animal histories Behaviour : proximate and remote causes, simple and complex behaviour. Innate and learned behaviours.habituation, sensizitation and associative learning. Play activity, consciousness and ritualization
8	stress immunity and disease, Evolution of immunity and the Red Queen hypothesis
8	Stress and Behaviour: Definition of stress, biological and physiological basis, behavioral consequences of stress. Stress and pain, stress and memory, aging and death.
4	The necessity and animal freedom Animal welfare: ethological strategies and limitations induced by environmental changes. The human-animal interaction from past to present.
4	Biodiversity and the environment. The European roles for the Protection and Conservation of Biodiversity

SYLLABUS

Hrs	Frontal teaching
4	Animal Welfare: Directive and regulations, Protection of animals used for scientific purposes, ethical aspects
2	Environmental stress and natural selection

Hrs	Practice
16	Construction of experimental plans for ethological approaches. Selection, experiment setting and observations of animal model . Application of scientific methods to the study of defense systems and animal welfare.