



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze e Tecnologie Biologiche, Chimiche e Farmaceutiche		
ACADEMIC YEAR	2016/2017		
BACHELOR'S DEGREE (BSC)	BIOLOGICAL SCIENCES		
INTEGRATED COURSE	GENERAL AND SYSTEMATIC ZOOLOGY WITH PRACTICE		
CODE	15884		
MODULES	Yes		
NUMBER OF MODULES	2		
SCIENTIFIC SECTOR(S)	BIO/05		
HEAD PROFESSOR(S)	LO BRUTTO SABRINA	Professore Associato	Univ. di PALERMO
	ARIZZA VINCENZO	Professore Ordinario	Univ. di PALERMO
OTHER PROFESSOR(S)	LO BRUTTO SABRINA	Professore Associato	Univ. di PALERMO
	ARIZZA VINCENZO	Professore Ordinario	Univ. di PALERMO
	SARA' MAURIZIO	Professore Associato	Univ. di PALERMO
CREDITS	12		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	2		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	ARIZZA VINCENZO Monday 9:00 13:00 Studio, Dip. STEBICEF Via Archirafi, 18 Tuesday 15:00 17:00 Sede del Consorzio Universitario, corso Vittorio Emanuele, 92, 93100 Caltanissetta Wednesday 9:00 13:00 Studio, Dip. STEBICEF Via Archirafi, 18 Thursday 9:00 13:00 Studio, Dip. STEBICEF Via Archirafi, 18 Friday 9:00 13:00 Studio, Dip. STEBICEF Via Archirafi, 18 LO BRUTTO SABRINA Monday 9:00 13:00 Gli studenti possono fissare un appuntamento in qualsiasi giorno via e-mail scrivendo a sabrina.lobrutto@unipa.it SARA' MAURIZIO Monday 08:00 10:00 Sezione Biologia Animale, Via Archirafi 18 stanza del docente Tuesday 08:00 10:00 Sezione Biologia Animale, Via Archirafi 18 stanza del docente Wednesday 12:00 14:00 Sezione Biologia Animale, Via Archirafi 18 stanza del docente		

PREREQUISITES	Basic concepts of Chemistry, Physics and Cytology
LEARNING OUTCOMES	Knowledge and understanding Acquisition of theoretical and methodological knowledge in the field of zoology that allow to understand the mechanisms and the current and historical causes of their distribution and adaptations. Recognition, through the use of specific systematic keys, of the main taxa that constitute the Italian fauna. Applying knowledge and understanding Ability to use independently the acquired knowledge and process faunal data to describe the state of the environment depending on the species present. Autonomous assessments Ability to own interpretation of the data and of a conscious evaluation of the level of integrity 'of the animal component of biological systems. communication skills Ability to present with clarity and propriety of language skills acquired and to disclose with scientific rigor. Acquiring social skills needed to work in multidisciplinary studies in the area. Learning ability Acquired ability to find information from the international zoological literature and to deepen and constantly update the material. Ability to undertake scientific and technical preparation and high degree of autonomy of systematic zoological studies more in-depth.
ASSESSMENT METHODS	The check mode is formulated on the basis of written and oral tests. The written tests are represented by an ongoing evaluation. The written tests are semi-structured and consist of a minimum of thirty questions. Applications accompanied by closed 5 answers tend to verify the knowledge of the disciplinary scope of the course. The written test is passed when the student is in possession of the minimum basic knowledge of the main topics of teaching and the technical language and minimal ability to independently apply the knowledge gained. The oral test tends to verify the processing capacity and possession of an appropriate visual display mastery of the topics, the properties of language and the ability to apply knowledge and skills to solve problems proposed. The assessment is expressed in thirtieth and examination will be evaluated according to the following assessment rubric: - Excellent 30-30 laude: Excellent knowledge of the topics, excellent properties' of language, good analytical ability, the student is able to apply knowledge to solve problems proposed. - Very good 26 - 29: Good mastery of the subjects, full ownership 'of language, the student is able to apply knowledge to solve problems proposed. - Good 24-25: Basic knowledge of the main topics, discrete properties of language, with limited ability to independently apply the knowledge to the solution of the proposed problems. - Satisfactory 21-23: does not have full command of the main teaching subjects but it has the knowledge, satisfactory property language, poor ability to independently apply the knowledge acquired - Sufficient 18-20: minima Basic knowledge of the main arguments put forward by the teaching and the technical language, very little or no ability to independently apply the knowledge acquired - Insufficient <18: does not have an acceptable knowledge of the contents of the topics covered in the teaching
TEACHING METHODS	Lectures and exercises teaching

DOCENTE: Prof.ssa SABRINA LO BRUTTO- *Lettere L-Z*

PREREQUISITES	Chemistry Physics and Cytology basic concepts
LEARNING OUTCOMES	Knowledge and understanding Acquisition of theoretical and methodological knowledge in the field of zoology focused on understanding the mechanisms and the current and historical causes of the distribution and adaptations of the species. Recognition, through the use of specific systematic keys, of the main taxa that constitute the Italian fauna. Applying knowledge and understanding Ability to use independently the acquired knowledge to describe the state of the environment depending on the species present. Making judgments Ability to own interpretation of the data and of a conscious evaluation of the level of integrity of the animal component of biological systems. Communication skills Ability to present with clarity and propriety of language skills acquired and to disclose with scientific rigor. Acquiring social skills needed to work in multidisciplinary studies in the area. Lifelong learning skills Acquired ability to find information from the international zoological literature and to deepen and constantly update the material. Ability to undertake scientific and technical preparation and high degree of autonomy of systematic zoological studies more in-depth.
ASSESSMENT METHODS	Oral exam
TEACHING METHODS	Lectures and Lab training

MODULE ZOOLOGY II WITH PRACTICE

Prof. MAURIZIO SARA' - Lettere A-K, - Lettere A-K

SUGGESTED BIBLIOGRAPHY

Hickman et al. ZOOLOGIA Ed. Mc GrawHill

Per consultazione: Nick Lane le Invenzioni della vita. Ed. il Saggiatore. Richard Dawkins Il Gene Egoista, Oscar Mondadori

AMBIT	10665-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	98
COURSE ACTIVITY (Hrs)	52

EDUCATIONAL OBJECTIVES OF THE MODULE

The course deals with Systematic Zoology from Protozoans to Vertebrates. Basic knowledge of Darwin's theory, morphology, evolution and systematic of every phylum are provided. Visits to Museum provide basic insight into the main Vertebrate species of Italian fauna.

SYLLABUS

Hrs	Frontal teaching
4	The Darwin's theory and the modern synthesis
3	the Protozoans
3	Poriphera (sea-sponges)
3	Cnidaria (Jellyfish, corals, and other stingers) and Ctenophora
3	Systematics and Taxonomy Platyzoa, Ecdysozoa and Lophotrocozoa
3	the Metazoan: Platyhelminthes (flatworms)
2	Nematodes (roundworms) and other Pseudocoelomates Metazoan
4	phylum Mollusca
3	Phylum Anellida and the earthworms
7	phylum Arthropoda
2	Phylum Echinoderms
3	phyla of Chordata
4	the Vertebrates
Hrs	Practice
2	Use of diagnostic keys
3	Visit to the Museum: the Invertebrates
3	Visit to the Zoological museum: the main vertebrates of the Italian fauna

MODULE ZOOLOGY I WITH PRACTICE

Prof. VINCENZO ARIZZA - Lettere A-K, - Lettere A-K

SUGGESTED BIBLIOGRAPHY

- Fondamenti di Zoologia Hickman et al, (15a Ed.). McGraw-Hill.
- AA.VV. Zoologia. Ed. Idelson-Gnocchi

AMBIT	50029-Discipline biologiche
INDIVIDUAL STUDY (Hrs)	98
COURSE ACTIVITY (Hrs)	52

EDUCATIONAL OBJECTIVES OF THE MODULE

The course defines the necessary tools to study zoology. It aims to raise awareness of the theories, the scientific basis of animal evolution, the levels of organization and training plans of the major phyla. Also highlights the body interactions / population environment.

SYLLABUS

Hrs	Frontal teaching
2	Life and zoological principles. The origins and chemistry of life
4	The theories and the scientific basis of evolution. Microevolution. The concept of population and animal species. Population genetics and speciation.
4	Evolutionary pressures, changes and environmental stress. The responses of organisms and populations. The diversity of origins of eukaryotes
2	Symmetry and skeletal systems
2	Protective systems and movement
2	Respiratory system
2	Circulatory system
2	Nutrition and digestion
2	Osmotic adjustment, excretion.
4	Nervous and chemical coordination
2	Thermoregulation
2	Evolution of the immune system
2	Basics of animal behavior
2	Animal mimicry
2	Symbiosis
4	Asexual and sexual reproduction, sex determination and reproductive strategies
2	Comparative study of the development and morphogenesis of reference phyla
Hrs	Practice
4	The asexual and sexual reproduction
2	Comparative study of the development and morphogenesis of reference phyla
2	Nutrition and digestion
2	Symmetry and skeletal systems

MODULE ZOOLOGY I WITH PRACTICE

Prof.ssa SABRINA LO BRUTTO - Lettere L-Z, - Lettere L-Z

SUGGESTED BIBLIOGRAPHY

Hickman et al "Zoologia" McGraw & Hill

Wilfried Westheide & Reinhard Rieger "Zoologia sistematica -Filogenesi e diversita' degli animali" Zanichelli

AMBIT	50029-Discipline biologiche
INDIVIDUAL STUDY (Hrs)	98
COURSE ACTIVITY (Hrs)	52

EDUCATIONAL OBJECTIVES OF THE MODULE

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SYLLABUS

Hrs	Frontal teaching
40	Life and zoological principles. The origins and chemistry of life. The theories and the scientific basis of evolution. Microevolution. The concept of population and animal species. Population genetics and speciation. Evolutionary pressures, changes and environmental stress. The responses of organisms and populations. The diversity of origins of eukaryotes. Symmetry and skeletal systems. Protective systems and movement. Respiratory system. Circulatory system. Nutrition and digestion. Osmotic adjustment, excretion. Nervous and chemical coordination. Thermoregulation. Evolution of the immune system. Basics of animal behavior. Animal mimicry Symbiosis. Asexual and sexual reproduction, sex determination and reproductive strategies. Comparative study of the development and morphogenesis of reference phyla.
40	The Darwin's theory and the modern synthesis. The Protozoans. Porifera (sea-sponges). Cnidaria (Jellyfish, corals, and other stingers) and Ctenophora. Systematics and Taxonomy. Ecdysozoa and Lophotrocozoa. The Metazoan: Platyhelminthes (flatworms). Nematodes (roundworms) and other Pseudocoelomates Metazoan. Phylum Mollusca. Phylum Anellida and the earthworms. Phylum Arthropoda. Phylum Echinoderms. Phyla of Chordata the Vertebrates

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Hrs	Practice
12	Lab
12	Lab
12	Lab
12	Lab

MODULE ZOOLOGY II WITH PRACTICE

Prof.ssa SABRINA LO BRUTTO - Lettere L-Z, - Lettere L-Z

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Wilfried Westheide & Reinhard Rieger "Zoologia sistematica -Filogenesi e diversita' degli animali" Zanichelli

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Hrs	Practice
12	Lab
12	Lab
12	Lab
12	Lab