**C0URSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | SCHOOL OF HEALTH | | | |
| **DEPARTMENT** | BIOLOGICAL APPLICATIONS AND TECHNOLOGY | | | |
| **CURICULUM OF STUDIES** | UNDERGRATUATE | | | |
| **LESSON CODE NUMBER** | **ΒΕ301** | **SEMESTER** | **3** | |
| **LESSON TITLE** | ΖOOLOGY | | | |
| **TEACHING ACTIVITIES** | **TEACHING HOURS PER WEEK** | | | **ΠΙΣΤΩΤΙΚΕΣ ΜΟΝΑΔΕΣ** |
| Theory | 3 | | | 7 |
| Lab | 3 | | |
| **COURSE TYPE** | Special background | | | |
| **PREQUISITIES** | NONE | | | |
| **TEACHING AND EXAMINATION LANGUAGE:** | Greek (Teaching, Examination)  English (Examination) | | | |
| **ERASMUS:** | The course is offered to exchange students. | | | |

1. **LEARNING OUTCOME**

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| **LEARNING OUTCOME** |
| Upon successful completion of the course, the students:  • Trained in basic morphology, anatomy and systemic aspects ofl organisms (Invertebrates and Vertebrates).  • Knowledge regarding evolution and the phylogenetic relationships between various animal groups.  • Anatomy skills in invertebrate and vertebrate classes.  • Observation and recognition of important organs in the body.  • familiarized with the use of microscopes, stereoscopes as well as the taxonomic guides of organisms and representative species.  • Observation and recognition histological samples from representative invertebrates, whole microscopic organisms and vertebrates.  • Awareness through the knowledge of the diversity of the animal world. |
| **GENERAL SKILL** |
| • Implementation in practice  • Search, analyze and synthesize data and information, using the necessary technologies  • Autonomous work  • Environmental awareness  • Criticism and self-criticism  • Work at an interdisciplinary level  • Promote free, creative and inductive thinking |

1. **LESSON SUBJECT**

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| Lectures:  1. Animal Diversity and Zoology Science.  2. Principles of Systematic Zoology. Protista.  3. General structure (tissues, etc.), morphological characteristics, origin and evolution of the animals.  4. External morphology, anatomy, classification and phylogeny of Sponges, Cnidaria, Ctenophora, Platyhelminthes, Nematoda, TrochoZoa, Mollusca, Annelida, Arthropoda and Echinodermata.  5. Morphology, Anatomy and Classification of Protochordata.  6. Introduction to vertebrates.1  7. Morphology, anatomy, ecology, classification, and phylogenetic relationships of Agnatha, Chondrichthyes and Osteichthyes.  8. Introduction to Tetrapoda, evolution of the systems during the transition from water to sea.  9. Morphology, anatomy, ecology, classification and phylogenetic relationships of the Amphibia.  10. Adaptations to the terrestrial environment - Amniota.  11. Morphology, anatomy, ecology, classification and phylogenetic relations of Reptilia.  12. Homiotherm animals. Origin of birds and mammals.  13. Morphology, anatomy, ecology, classification and phylogenetic relations between birds and mammals.  Laboratory exercises:  1. Microscope use. Protista. Microscopic observation of Sarcodina, Mastigophora, Ciliophora. Cultivation and observation of protozoa. Organelle identification using dyes.  2. Stereoscope use. Sponges: Microscopic observation of skeletal elements. Cnidaria: Microscopic and macroscopic observation of Hydrozoa, Scyphozoa, Anthozoa.  3. Platyhelminthes-Aschelminthes. Platyhelminthes, Nematoda, Annelida: Observation, of microscopic and macroscopic samples. Anatomy of Polychaeta and Oligochaeta. Microscopic observation of Rotifera.  4. Mollusca: Macroscopic observation of Mollusca. Snail, cuttlefish and mussel anatomy.  5. Insects: Observation of microscopic and macroscopic samples. Insect morphology and anatomy.  6. Crustaceans. Observation of microscopic and macroscopic samples of Crustaceans (Cladocera, Copepoda, Amphipoda, Isopoda, Decapoda, Cirripedia). Crayfish and crab anatomy.  7. Echinodermata Observation of Echinoderm groups (Crinoidea, Asteroidea, Ophiuroidea, Echinoidea, Holothuridea). Sea urchin and sea cucumber anatomy. Microscopic samples observation: Starfish arm anatomy, larval forms of Echinodermata.  8. Morphology and anatomy Chondrichthyes (dogfish).  9. Morphology and anatomy Osteichthyes (Rutilus sp.).  10. Morphology and anatomy of Amphibia (frog).  11. Morphology and anatomy Bird(pigeon).  12. Morphology and anatomy of Mammalia (mouse). |

1. **TEACHING AND LEARNING METHODS - EVALUATION**

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| **COURSE OF TRAINING** | Face to face |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES** | • Use of ICT in Teaching  • Use of ICT in Laboratory Education  • Use of ICT in Communication with students |
| **TEACHING PROGRAMME** | |  |  | | --- | --- | | ***ACTIVITY*** | ***WORKLOAD*** | | Lectures | 39 | | Laboratory exercises | 21 | | Scientific papers Processing | 10 | | Total workload | 70 | |
| **STUDENT EVALUATION** | Written examination with short response questions.  Written Examination with long Response Questions |

1. **ATTACHED BIBLIOGRAPHY**

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| **Literature**  Hickman C., Roberts L., Keen S., Larson A., I' Anson H., Eisenhour D. 2015. Integrated Principles of zoology. McGraw-Hill Science/Engineering/Math; 15 edition (October 1, 2010).  **Additional literature**  BIODIDAC, a bank of digital resources for teaching biology, Univ. of Ottava <http://biodidac.bio.uottawa.ca/thumbnails/catquery.htm?kingdom=Animalia>- Animal Diversity Web, University of Michigan Museum of Zoology <http://animaldiversity.ummz.umich.edu/site/index.html> Invertebrate Zoology Home Page, Marrieta College, Ohio <http://www.marietta.edu/~mcshaffd/invert/>J. G. Houseman, Univ. of Ottava, Digital Zoology, Student Workbook. Published by The McGraw-Hill Companies 2002. <http://www.mhhe.com/biosci/pae/zoology/houseman/dzworkbook.pdf> Οnline biology textbook by John W. Kimball ([jkimball@CGR.Harvard.edu](mailto:jkimball@CGR.Harvard.edu)) <http://home.comcast.net/~john.kimball1/BiologyPages/I/Invertebrates.html> University of California Museum of Paleontology, Berkeley <http://www.ucmp.berkeley.edu/help/taxaform.html> Understanding Evolution, website from University of California, Berkeley <http://evolution.berkeley.edu/evolibrary/home.php> |