Course Code: ZOC-205 **Course Title: Laboratory Course II**
Number of Credits: 4
Effective from AY: 2020 -21

Prerequisite for the Course:	Basic working knowledge of Animal Anatomy, Physiology, Embryology and ecology	
Objectives:	Laboratory hands on training in various aspects of developmental biology, anatomy, physiology and ecology.	
Content:	**Anatomy of Chordates** 1. Preparation of skeleton using a bird (bird to be collected from slaughter house). 2. Exposure of axial muscle of fish (dead fishes to be collected from market). 3. Flight muscles of bird (bird to be collected from slaughter house). 4. Afferent and Efferent branchial system of fishes. 5. Reproductive system of fish (dead fish collected from the market). 6. Cranial nerves (Vth - VIIth and IXth - Xth) of teleosts. (dead fish collected from the market). **Animal Physiology** 1. Study of human lung volumes and capacities during before and after exercise using Respirometer. 2. Determination of metabolic rate using Respirometer. 3. Estimation of heart rate, pulse rate and blood pressure changes during exercise using the Oscillometric technique. 4. Study of ECG and its evaluation in normal and pathological variations. 5. Evaluation of heart rate, blood pressure using ECG strip. 6. Measurement of muscular fatigue using Finger Ergograph. 7. Study of nitrogenous waste products of animals from different habitats. 8. Analysis of coelomic fluid of star fish. **Developmental Biology** 1. Identification of developmental stages of chick embryo using HH classification. 2. In vitro culture of chick embryo. 3. Effect of proline / retinoic acid in early development of chick embryo (In vivo as well as in vitro). 4. Effect pesticides on the ossification process of chick embryo by dual staining method.	**12 lab hours** **12 lab hours** **12 lab hours**

	Ecology 1. Assessment of density, frequency and abundance of animals in a community using various techniques i.e. transect, quadrate etc. 2. Measurement of Productivity in ecosystems. 3. To study frequency of herbaceous species in a landscape and to compare the frequency distribution with Raunkiaer's standard frequency diagram. 4. To determine the biomass of a particular area. 5. Food web analysis and studies along with energy flow. 6. Decomposition of various organic matters and nutrient release mechanisms, quantification / role of arthropods and other micro-, and macrofauna in decomposition. 7. Biomagnification/Bioaccumulation analysis in ecosystems. 8. To study the biotic components of a water body. 9. Principles of GIS, GPS and Remote Sensing technology. 10.Interpretation (visual and automated) of remote sensing information for landscape differentiation. **Field Work** Faunistic survey around 1 km radius of his/ her residence during dawn of every weekends for at least 2 months (8 weeks) using Transect or Quadrangle method of two different fauna. Visit to some National Park / Sanctuary and Some University and Research Institution out side Goa (within 1000 km from Goa) for 5 -6 days including Journey period. *In unavoidable circumstances overnight field work will be replaced by extending the time period (from 8 weeks to 10 weeks of weekend faunistic survey). *Evaluation of the field work component will be based on weekly field note and final compiled field report during SEA.	**12 hours**
Pedagogy:	Practicals/ Mini projects/ Group Activities.	
Learning Outcome:	Practicals will give hands on training based on courses ZOC 201, 202, 203 & 204.	
References /Reading:	As mentioned under individual course ZOC 201, 202, 203 & 204.	