

Courses specification PHD

A Brief Description of the Ph. D. Courses

1) Compulsory Courses (10 hours):

Zoo 611	Principles of Zoology	2 (2+0)
Applied Entomology and Parasitology	pathological survey of arthropods and other parasites. Advanced studies on the arthropods of their economic importance. Advanced studies on the pathogenesis of some diseases caused by or transmitted by arthropods. Advanced studies on the pathogenesis of some parasitic diseases of man and his domesticated animals.	

Zoo 621	Principles of Zoology	2 (2+0)
Advanced Aquatic Animals	Recent advances in aquatic animal characteristics, phylogeny, adaptations, zoogeography and reproductive strategies.	

Zoo 631	Principles of Zoology	2 (2+0)
Comparative Reproductive Physiology	Contents: Comparative study of reproduction in fishes, amphibians, reptiles, birds and mammals including the male and female reproductive systems. reproductive cycle. gametogenesis and fertilization. care of the embryo and fetus and their expulsion. the effect of environment on reproduction	

Zoo 641	Principles of Zoology	2 (2+0)
Advanced cell Biology	Contents: The cell as a cytotoxic testing system. Labeling the cell molecules. Cell fusion by inactivated viruses and by polyethylene glycol. Study of specialized cells and cells in cultures. Immuno-genetics and the major histo compatibility complex.	

Zoo 671	Principles of Zoology	2 (2+0)
Advance Animal Ecology and Pollution	Contents: Species diversity, community structure and diversity, predators and predation, aquatic community regulation. Habitat types. Feeding mechanisms. factors controlling diversity. Fresh water wetland. Mangrove mangles. inorganic pollutants. organic pollutants. biological pollutants and physical pollutants.	

2) Elective Courses (8 hours):

Zoo 612	Principles of Zoology	2 (2+0)
Advanced Entomology	Contents: Morphological and physiological adaptation of insects. Habitat problems of insects. respiration and osmoregulation. Organization of the nervous and muscular systems. Neurosecretory hormones:Diapause. moulting and juvenile hormones. Pheromones and their applications. Insects and their relationship with man: Physical and chemical disturbances, environmental impact assessment, insects as vectors of diseases.	

Zoo 613	Principles of Zoology	2 (2+0)
Parasite culture	Contents: This course aims to provide parasitology Ph.D. students with the theoretical principles of parasite culture (in culture media and in laboratory animals) that they might need for their Ph.D. research programs. It includes: an introduction about animal tissue culture, the theoretical principles of culturing (in culture media) the following parasites: Trypanosoma spp. Leishmania spp. Entamoeba spp. Bladderworms, especially hydatid cysts, free-living strongly larvae and methods of identification of infective forms. Maintenance of various parasites in laboratory animals.	

Zoo 614	Principles of Zoology	2 (2+0)
Selected topics in Entomology and Parasitology	Contents: Advanced selected topics in entomology or parasitology in accordance with the needs of the student and the guidance of the supervisor.	

Zoo 622	Principles of Zoology	2 (2+0)
Aquatic vertebrates	Contents: Broad and detailed view of the recent advances in systematic, comparative anatomy, functional morphology, adaptations and zoogeography of aquatic vertebrates. Recent issues and current interest in the biology and the distribution of Arabian aquatic vertebrates.	

Zoo 623	Principles of Zoology	2 (2+0)
Nutrients requirements and Metabolism in Fish	. Contents: Advanced study of nutrients requirement and metabolism of fish in various physiological conditions. Factors affecting the nutrients requirement. Interaction of protein, fat and carbohydrate metabolism. Students' reports from journal articles on recent advances.	

Zoo 624	Principles of Zoology	2 (2+0)
Bioeconomics of fisheries resources	Contents: Economic analysis used in the evaluation of fisheries resources, supply and demand statistical analysis and data generation, laws affecting production and catch, economics of fisheries projects.	

Zoo 635	Principles of Zoology	2 (2+0)
Advanced Animal behaviour	Contents: An Introduction to animal behavior and types of behavior. Foraging behavior and different regimes. Behavioral physiological adaptations. Animal behavior and applied Pharmacology. The role of animal behavior in biomedical studies. Biological rhythm, homing and migration. Animal communication. Applications of Pavlov experiments. Biological control. The role of nervous system in behavior.	

Zoo 638	Principles of Zoology	2 (2+0)
Advanced topics in Physiology	Contents: Reviewing the up-to-date knowledge and information available in the various disciplines of animal physiology including: neuro, endocrine, immuno, cardio-vascular, renal, gastrointestinal and reproductive physiology.	

Zoo 639	Principles of Zoology	2 (2+0)
Current topics in Developmental Biology	Contents: Follow up of the recently published research in the area of developmental biology including: The molecular basis of developmental biology, gametogenesis and maturation of gametes, in vitro fertilization and embryo transfer, immune response during embryogenesis, recent techniques for tracing embryonic growth, factors involved in controlling embryonic cell proliferation.	

Zoo 642	Principles of Zoology	2 (2+0)
Advanced Cytology	Contents: Cell membranes and their principal functions. Cell organelle's functions and the relationship between them. The cytoskeleton and its role in cell support and transport. Cell development and differentiation and factors affecting its growth. The nucleo cytoplasmic interactions. Properties and types of cell cancer.	

Zoo 634	Principles of Zoology	2 (2+0)
Functional Histology	Contents: Detailed studies on the correlation between the histology and the function of the digestive, urinary and reproductive systems and the sense organs.	

Zoo 651	Principles of Zoology	2 (2+0)
Molecular genetics	Contents: Control of gene expression and enzyme differentiation, hormonal control of gene expression, genetic polymorphism among enzyme loci, molecular population genetics and its techniques, DNA sequencing, genetic factors in developmental regulation and the molecular basis of the cytoplasmic inheritance.	

Zoo 672	Principles of Zoology	2 (2+0)
Terrestrial Animal Ecology	Contents: Nature of communities, influence of competition and predation on community structure, terrestrial communities (desert, grass land, tropical community). Biodiversity in desert ecosystem, island ecology, topics on wildlife conservation, special topics on desert ecology (desertification).	

Zoo 673	Principles of Zoology	2 (2+0)
Aquatic Animal Ecology	Contents: Advanced consideration of the aquatic ecology of aquatic animals species emphasizing current issues which include: community structure, population growth, population regulation, dispersion, species interaction, diversity, competition, predation, age composition, density and niche theory. Recent advances of the interrelationships between aquatic fauna and their environment. In depth studies, of recent advances of statistical design and analysis of ecological measurement of selected aquatic populations.	

Zoo 674	Principles of Zoology	2 (2+0)
Advanced studies in Pollution	Contents: Chemistry of ecological pollutants, physics of ecological pollutants, advanced studies in pollutants measurement. Advanced studies in geographical distribution of pollutants with relation to animal distribution. Advanced studies in effects of pollutants on animal physiology.	

Zoo 691	Principles of Zoology	2 (2+0)
Seminar	Contents: Presentation and discussion of advanced topics in Zoology according to the guidance of the course instructor.	

Zoo700	Principles of Zoology	2 (2+0)
Dissertation	Contents: The student conducts scientific research in one of the tracks and writes a dissertation under the supervision of a faculty member.	