

SYLLABUS FOR B.Sc.COURSE IN ZOOLOGY

SESSION–2021-2022 onwards



**DEPARTMENT OF ZOOLOGY
SCHOOL OF BIOLOGICAL SCIENCES (SBS)
DR. HARISINGH GOUR UNIVERSITY
SAGAR (M.P.) 470 003**

B.Sc.VI Semester			
CoreCourseCode		PaperTitle	Credits
ZOO-SEC-IV-613	(Theory)	Skill Enhancement Course (SEC): Apiculture	02
ZOO-DSE-614	(Theory)	Discipline Specific Elective(DSE-II)- Applied Zoology	04
ZOO-DSE-615	(Practical)	Discipline Specific Elective(DSE-II)– Applied Zoology	02
TotalCredits06+02			

SKILL ENHANCEMENT COURSES
(ZOO-SEC-IV-613)
APICULTURE
(Credits:02)

06hrs/unit (Total :30 hrs)

Unit1:History – Biology and classification of species of honey bees; Social organization of honey bee colony.

Unit2:Beehive–Floraforapiculture–Selectionofbeesforapiculture,MethodofbeeKeeping; Indigenous method of Extraction of honey

Unit3:Modernmethodofapiculture–Appliancesformodernmethod.DiseasesofHoneybeeand control measures.

Unit4:Productsofbeekeeping:Honey–BeewaxandBeeYeman–Honey:Production,Chemical composition – Economic importance of Honey bee wax.

Unit5:Bee enemies, Bee keeping industry;Recent efforts – Modern method in employing honey beesfor cross pollination in horticultural gardens.

Suggested Readings:

1. ApiculturebyN. Arumugam,K. V. Jayashree,C.S. Tharadevi
2. TextbookofApiculture(Beekeeping)byDr.D.K.Belsare,Dr.RakeshKumarSingh,Dr.Mrs. Shashikala D Belsare and Mr. Ravindra Aliai Raviraj Himmatrao Deshmukh
3. ApicultureICAR byDr J.K. Gupta.

Learning Outcome:

Bythe end of thecourse,the student should be able to:

1. Identifyanddescribethefundamentalsand scientificbasisof beekeeping
2. Recognizebiologicalprinciplesapplicabletomanyorganismsbyusingthehoneybeesasastudy subject
3. Appreciatetheimportanceofhoneybeesasbeneficialinsectsinvolvedin foodproductionandin ecosystem sustainability
4. Explain management practices involved in keepinghoneybees healthyand productive

DISCIPLINE SPECIFIC ELECTIVE
ZOOLOGY (ZOO-DSE-614)
APPLIED ZOOLOGY
(Credits : 04)
THEORY

12hrs/unit(Total :60 hrs)

UNIT-I

IntroductiontoHost-parasiteRelationship,EpidemiologyofDiseases,RickettsiaeandSpirochaetes

- Host,Definitivehost,Intermediatehost,Parasitism,Symbiosis,Commensalism,Reservoir, Zoonosis
- Transmission,Preventionandcontrolofdiseases:Tuberculosis,swineflu,typhoid
- Briefaccountof*Rickettsiaprowazekii*,*Borreliare currentis*and*Treponemapallidum*

UNIT-II

ParasiticProtozoaandParasiticHelminthes

- Lifehistoryandpathogenicityof*Entamoebahistolytica*,*Plasmodiumvivax*and*Trypanosomagambiense*
- Lifehistoryandpathogenicityof*Schistosomahaematobium*,*Ancylostomaduodenale*and*Wuchereriabancrofti*

UNIT-III

InsectsofEconomicImportanceandInsectsofMedicalImportance

- Biology, Control and damage caused by *Helicoverpa armigera*, *Pyrilla erpusilla* and *Papilio demoleus*, *Callosobruchus chinensis*, *Sitophilus oryzae* and *Tribolium castaneum*; Safe storage of stored grains
- Life cycle, medical importance and control of *Pediculus humanus corporis*, *Anopheles*, *Culex*, *Aedes*, distinguishing features of *Anopheles* *ulex*, *Aedes* *Xenopsylla* *cheopis*, *Phlebotomus argentipes*

UNIT-IV

Animal Husbandry and Poultry Farming

- Preservation and artificial insemination in cattle; Induction of early puberty and synchronization of estrus in cattle
- Principles of poultry breeding, Management of breeding stock and broilers, Processing and preservation of eggs

UNIT-V

Fish Technology

- Genetic improvements in aquaculture industry; Induced breeding and transportation of fish seeds

SUGGESTED READINGS

- Park, K. (2007). *Preventive and Social Medicine*. XVI Edition. B.B Publishers.
- Arora, D. R. and Arora, B. (2001). *Medical Parasitology*. II Edition. CBS Publications and Distributors.
- Kumar and Corton. *Pathological Basis of Diseases*.
- Atwal, A. S. (1986). *Agricultural Pests of India and South East Asia*, Kalyani Publishers.
- Dennis, H. (2009). *Agricultural Entomology*. Timber Press (OR).
- Hafez, E. S. E. (1962). *Reproduction in Farm Animals*. Lea & Febiger Publisher
- Dunham R. A. (2004). *Aquaculture and Fisheries Biotechnology Genetic Approaches*. CABI publications, U.K.
- Pedigo, L. P. (2002). *Entomology and Pest Management*, Prentice Hall.

Learning Outcome:

After successfully completing this course, the students will be able to:

1. Develop an understanding of host-parasite relationship, epidemiology of diseases, Rickettsiae and Spirochaetes.
2. Understand the diseases caused by protozoal and helminthic parasites.
3. Identify common insect pests of economic and medical importance and their management.
4. Increase their skills, attitudes and knowledge towards causes of some common diseases.
5. Understand the process of artificial insemination and induction of early puberty in cattle.
6. Understand skill and requirements necessary for poultry farming.
7. Understand the importance of genetic improvement in aquaculture industry.

DISCIPLINESPECIFIC ELECTIVE ZOOLOGY
(ZOO-DSE-615)
APPLIED ZOOLOGY
(Credits: 02)
PRACTICAL

1. Study of permanent slides/photomicrographs and specimens of *Plasmodium vivax*, *Entamoeba histolytica*, *Trypanosoma gambiense*, *Schistosoma haematobium*, *Ancylostoma duodenale* and *Wuchereria bancrofti*
2. Study of arthropod vectors associated with human diseases: *Pediculus*, *Culex*, *Anopheles*, *Aedes* and *Xenopsylla*.
3. Study of insect damage to different plant parts
 - a. **Leaf roller:** *Syleptaderogate* (*Ladyfinger*)
Sphenoptera perotetti
 - b. **Stem borer :** *Scipophaga incertulas*
Chilo infuscatellus.
 - c. **Root borer :** *Emmalocera depraessella*.
Leucinodes orbonalis.
4. Identifying feature and economic importance of *Helicoverpa* (*Heliothis*) *armigera*, *Achaeajana*, *Papilio demoleus*, *Pyrilla perpusilla*, *Callosobruchus chinensis*, *Sitophilus oryzae* and *Tribolium castaneum*, *Trogoderma granarium*, *Rhizopertha dominica*.
5. Visit to poultry farm or animal breeding centre. Submission of visit report.
6. Maintenance of fresh water aquarium.