**GOVERNMENT COLLEGE FOR WOMEN, PARADE, JAMMU(J&K)**
**SYLLABUS OF ZOOLOGY**
**FOR BSC SEMESTER (V) FOR THE EXAMINATION TO BE HELD IN THE YEARS 2016, 2017 AND 2018.**

The course would be of 150 marks. theory and practical would carry 100 and 50 marks respectively. There shall be one written paper of 80 marks, the duration for which would be three hours; 20 marks would be for internal assessment in theory including 5 marks for attendance. Practical internal and external would carry 25 marks each and duration of practical paper shall be of four hours. In case of the regular students internal assessment received from the college will be added to the marks obtained by them in the final examination and in case of private candidates marks obtained by them in the final examination shall be increased proportionately in accordance with the statues / regulation.

**PARASITOLOGY (theory)** **MAXIMUM MARKS : 80**

**OBJECTIVE**

The Course is designed to introduce the student to the fundamental of parasitology so that the knowledge thus gained could be useful to them in the later walks of life as extension specialists or as scientific investigations. The course entails a broad view of morphology biology and bionomics of the parasites specific to man.

**DETAILED SYLLABUS**

**UNIT I** **TOTAL PERIODS : 90**

1.1 Scope and definition of parasitology .
1.2 Symbiotic relationship and its types
1.3 Concept of susceptibility .
1.4 Immunity and its types
1.5 Vector and host types and interdependence.
1.6 Types of parasitic relationships in animal kingdom.
1.7 Parasitic adaptation and degeneration

**(18 periods)**

**UNIT II**

2.1 Structure of virus with special reference to bacteriophage.
2.2 Classification of viruses.
2.3 Study of following diseases caused by viruses in man, their symptoms, mode of transmission and preventive measures.
  2.3.1 AIDS
  2.3.2 RABIES
  2.3.3 MEASLES
2.4 Structure of Bacteria

2.5 Study of following bacterial diseases of man, their symptoms, mode of transmission and preventive measures.

2.5.1 Tuberculosis

2.5.2 Pneumonia

2.5.3 Cholera

**UNIT III**

Habit, Habitat, general morphology, specific adaptability, mode of transmission, life cycle, pathogenesis and prophylaxis of the following protozoan parasites of man

3.1.1 Giardia

3.1.2 Trypanosoma

3.1.3 Entamoeba

3.1.4 Plasmodium

3.1.5 Leishmania

**UNIT IV (18Period )**

4.1 Habit, habitat, general morphology ,specific adaptability mode of transmission, life cycle, pathogenesis and prophyxis of the following parasites of the man.

4.1.1 Schistosoma

4.1.2 Fasciolopsis buski

4.1.3 Diphyllobothrium

4.1.4 Echinococous

4.1.5 Filaria

4.1.6 Ancylostoma

4.1.7 Acanthocephala : General organization and economic Importance

**UNIT V (18Period )**

5.1 Gastro – intestinal tract as habitat of protozoan and helminth parasites of man

5.2 Blood and lymph as habitat of nematode parasites of man.

5.3 Reticulo endothelial system as habitat of protozoan parasite of man

5.4 Host – parasite specificity

5.5 Evolution of parasitism

**NOTE FOR PAPER SETTING**

**Section .A:** 10 short answer question are to be set with at least two questions from each unit. The maximum length of answer shall be 20 words. All questions are compulsory. Each question will carry 2 marks, total weightage being 20 marks

**Section B:** This section will comprise of ten questions, with two questions from each unit.students have to attempt 05 questions one from each unit. Each question will, carry 12 marks and the total weightage being 60 marks.

**Note for drawing well labeled diagrams where ever necessary must be mentioned in questioned paper.**

**Books Recommended**


1. Cemeron, D. Parasites and Parasitism
2. Kudo,P.R. Protozoology
3. Greal, K.G Protozoology, Springer- Variog, Budlin
4. Baker Parasitic Protozoa – Hutchinson Lib. Series
5. Hyman, H. The Invertebrate Protozoa Through Ctenophora
6. Gynab .L.H. (1951) the Invertebrates Planthyheminthes, Vol.III
7. Ben Daves (1968) The trematoda, Cambridge Univ. Press
8. Thomas Chang (1964) The Biology Of animal Parasites Toppan Co Ltd. Tokyo , Japan
9. Chitwood & Chitwood
10. The Biology of animal
11. Gaust, E.C. (1949) Human Helminthology, Lea & Febiger, Philadelphia
12 parasitology by noble
13 introduction to parasitology by chandler
14 parasitology by smith
15. helmenthology by Faust.
16 ecology of animal parasites by N. A. Gall


**LABORATORY COURSE ( PRACTICAL )**

1. a) Study of Sea – anemone and hermit crab as an example of communalism
   b) study of poly flagelates from gut of termites as an example of symbiosis
2. Study of structure of bacteria from the curd culture
3. Study of the following protozoan parasites through slides
   1) Leishmania 2) Trypanosoma
   3) Entamoeba 3) Plasmodium
4. Study of metazoan parasites of fish and poultry from live specimens
5. Study of ticks and mites from prepared slides
6. Study of parasitic (bed bug and lice) and predatory insects (praying mantis and dragon fly) in relation to their adaptations.
7. Viva-voce

**GOVERNMENT COLLEGE FOR WOMEN, PARADE, JAMMU(J&K)**
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**Economics Zoology** **80 Marks**

## Objective

The course deals broadly with Economics zoology besides providing an insight into the relative usefulness of animals as human food. The course introduces the students to some important economic aspects of zoology ,a line which they may ultimately choose to develop for their self –employment (whole time or part time).

## DETAILED SYLLABUS

**UNIT I-: AQUACULTURE** **TOTAL PERIODS :90 (18 Periods)**

1.1 Status and scope of Aquaculture
1.2 Monoculture
- 1.2.1 Prawn culture
- 1.2.2 Pearl culture
- 1.2.3 Crap culture
- 1.2.4 Trout culture
- 1.2.5 Crab culture

1.3 Polyculture (Composite fish culture)
1.4 induced Breeding in fishes
1.5 Economic importance of fishes (Self study)

**UNIT II: APICULTURE SERICULTURE AND LAC CULTURE (18 period )**

**2.1 Apiculture :**

2.1.1 General morphology of honey bees, with special reference on mouth parts and appendages of workers
2.1.2 Life cycle of Honey –bee
2.1.3 composition of honey , Uses of honey & Bee – Wax;
2.1.4 Methods use in Apiculture
2.1.5 Predators and Parasites of honey bee
2.1.6 Bee Venom as medicine

**2.2 Sericulture :**

2.2.1 Silk producing insects in India and kinds of silk fibers produced
2.2.2 Life Cycle of silk worm (*Bombyx mori)*
2.2.3 Economic Importance of Silk worm
2.2.4 Mulberry cultivation for sericulture
2.2.5 Principles of silk worm rearing
2.2.6 Pebrine Disease, Its Genesis Pathogensis And Prophylaxis
2.2.7 Status of sericulture in J&K

**2.3 Lac Culture**

2.3.1 Life Cycle of Lac Insect
2.3.2 Lac Cultivation , Formation and Uses

**UNIT III Poultry and cattle farming**

**3.1 Poultry farming**

3.1.1 Breeds of Poultry birds and their characteristics; Rhode island red ; white- Leghorn; Black Minorca; Aseel , Chittagong
3.1.2 Poultry breeding and rearing
3.1.3 Poultry feed and quality food
3.1.4 Poultry diseases: causes, symptoms, pathogenesis, mode of transmission and prophylaxis of the following poultry diseases, Ranikhet, Coccidiosis and Avian tuberculosis.

**3.2 Cattle Farming**

3.2.1 Breeds of dairy cattle and their characteristics Red sindhi sahiwal , Red Dane Haryana , holstien – Friesian Jersy
3.2.2 Feeding and fodder (Self study)
3.2.3 Cattle diseases : mastitis , anthrax , Foot and mouth diseases

**UNIT –IV : Animal Pests**

4.1 Overview of Nematode parasite of potato, tomato and wheat.
4.2 Insect Pests:

4.2.1 Insect pests of stored food : diagnostic features, extent of damage and control measures.
4.2.1.1 *Sitophilous oryze* ( Rice – Weavil )
4.2.1.2 *Tribolium castenum* ( red – flour beetle)
*4.2.1.3 Rhizopertha dominica*

4.3 Insect Pests of standing crops
4.3.1 *Leptocorsia vericornis* ( Rice- Gundhi Bug )
4.3.2 *Pectinophora gossypiella* ( Pink- boll worm of Cotton )

4.4 Insects as vectors of human diseases

4.5 Ticks and mites: their harms, role and control

4.6 Snakes
4.6.1 poisonous snakes and venom
4.6.2 Role of snakes in rodent pest control

4.7 Birds :
4.7.1 Birds as pest
4.7.2 Role of birds in pest control (Self Study)

**UNIT V : BIOTECHNOLOGY :**

5.1 General concepts of biotechnology

5.2 Biotechnology in live stock:
5.2.1 in-vitro fertilization
5.2.2 Artificial insemination
5.2.3 Surrogate mothers : embryo transfer technology
5.2.4 Cloning (basic concept)

5.3 Applications of biotechnology
5.3.1 Biogas
5.3.2 Biofertilizers
5.3.3 Bioinsecticides
5.3.4. Antibiotics

**NOTE FOR PAPER SETTING**

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**Section B:** This section will comprise of ten questions, with two questions from each unit.students have to attempt 05 questions one from each unit. Each question will, carry 12 marks and the total weightage being 60 marks.
**Note for drawing well labeled diagrams where ever necessary must be mentioned in questioned paper.**

## Books Recommended

1. Ullal S.R. and Narsimabanna

2. Technology of fishes , Acad. Press Londan
3. Singh V P and Ramachandran , V ( 1985), Fresh Water fish culture ICAR New Delhi
4. Stickney , R R ( 1979 ) Principle of warm water aquaculture , John Willey & Sons New Delhi
5. Jhingran, VP ( 1982) Fish and Fisheries of India Hindustan Pub. Corp. ( India ) New Delhi
6. Kurian C V and Sebastian V C , Prawns and prawn Fisheries of India Hindustan Publ Corp ( India) New Delhi
7. Prave P Faust I sitting W & Sukatsch , D A ( 1987) fundamental Of Biotechnology VCH Pub Germany
8. Higgim , I J best DJ and Jones J ( 1985), Biotechnology Principle and Application Blackwell Scientific Publ. Oxford
9. Banerjee, G C ( 1982), Poultry , Oxford and IBM Publ
10. Naik K K Anathakrishnan , T N and David B V, Poultry , Oxford and IBM Publ.
11. Matcalf C.L. and Flint, W.P. Useful and destructive insects. Tata McGraw hill Publ. New Delhi
12. Roberts. S.O. Veterinary Obaterrics and genital diseases
13. Shukla and Upadhya Economic Zoology
14. Kovaleve ,P.A. Silkworm breeding stocks Central Silk Broad, Marine , Drive Bombay
15 Roger , A Morse, The ABC and XYZ of Bee Culture A.I. Root & Co Medina , Ohia

**LABORATORY COURSE ( PRACTICAL )**

1. Morphology of head , wing ,legs thorax and abdomen of honey –bee
2. study of mouth parts , sting apparatus and hind legs of honey –bee from prepared Slides
3. study of life history of honey –bee
4. Study of life history of *Bombyx mori* using preserved specimen
5. study of type of silk fibers from prepared slides
6. Candling of egg of fowl for differentiation of the fertilized eggs from The unfertilized eggs
7. study of the following insect pest i)Rice- weevil ii) Red flour beetle iii) Lesser Grain borer iv) Rice- Gundi bug v) Pink boll worm of cotton
8. Collection and preservation of insect pests
9. Identification and culture of fish food organism ( protozoa and rotifers)
10. Identification of major and minor carps locally available ( cat fish air- breathing fish)
11. A visit to sericulture farm for the study of life cycle of *Bobmyx mori*, different types of cocoons and silk spinning techniques.
12. A visit of apiculture farm.
13. A visit to poultry farm.
14. A visit to dairy farm
15. A visit to fish farm/aquarium
16. A visit to university Zoological Park
17. Study of common poisonous snakes from specimens
18. Aquaculture: identification of cultivable
    a) Prawn, crab, lobster
    b) Clams, mussel and oyster
    c) Food fishes
    d) Ornamental and exotic fishes
19. Study of parasitic (bed bug and lice) and predatory insects (praying mantis and dragon fly) in relation to their adaptations.
20. Viva-voce