P. G. Department of Zoology
syllabus
University of Kashmir, Srinagar M.Sc
3rd Semester

POST GRADUATE DEPARTMENT OF ZOOLOGY
UNIVERSITY OF KASHMIR
CHOICE BASED CREDIT SYSTEM (CBCS) SCHEME FORMAT SEMESTER–3rd

Course Code	Course Title	Paper Category	Hours/ Week			Credits	Theory Marks		Practical Marks	
			L	T	P		Ext.	Int.	Ext	Int.
Zoo-301-CR	Genetics and Evolution	Core	3	2	0	4	60(24)	15(6)	25 (Seminar)	
Zoo-302-CR	Cell and Molecular Biology	Core	3	0	2	4	60(24)	15(6)	20	5
Zoo-303-CR	General Entomology	Core	3	0	2	4	60(24)	15(6)	20	5
Zoo-304-DCE	Veterinary and Agricultural Nematology	Discipline Centric	3	0	0	3	60(24)	15(6)	—	—
Zoo-305-DCE	Limnology and Inland Fisheries	Discipline Centric	2	0	2	3	40(16)	10(4)	20	5
Zoo-306-DCE	Economic Entomology	Discipline Centric	2	0	2	3	40(16)	10(4)	25 (Project)	
Zoo-307-DCE	Conservation Biology, Ecotourism & Captive breeding	Discipline Centric	2	0	2	3	40(16)	10(4)	25 (Project)	
Zoo-308-GE	Clinical Parasitology and Immunology	Generic Elective	2	0	2	3	40(16)	10(4)	20	5
Zoo-309-GE	Conservation Biology & Wildlife Resource Management	Generic Elective	2	0	2	3	40(16)	10(4)	20	5
Zoo-310-OE	Fish and Fish Feeding	Open Elective	2	0	0	2	40(16)	10(4)	—	—
Zoo-311-OE	Beneficial & Harmful Insects	Open Elective	2	0	0	2	40(16)	10(4)	—	—
Total credits= 34		Contact hours= 42				34				

GENERAL INSTRUCTIONS FOR THE CANDIDATES

1. A candidate has to obtain a minimum of 24 credits per semester i.e., 96 credits in two year programme (4 semesters).
1. Out of 24 credits in a semester a candidate has to obtain 12 credits compulsorily from **"Core Courses"** while the remaining 12 credits can be obtained from the **"Electives"** in the following manner:

►A candidate can obtain a maximum of 6 credits within his/her own Department out of the specializations offered by the Department as **Discipline Centric Electives.**

►6 credits shall be obtained by a candidate from the **Electives** offered by the Departments other than his/her own. The candidate shall be free to obtain these 6 credits from the **Generic** or **Open Electives** or a combination of both.

2. A candidate can go with a slow pace and obtain only 20 credits in a semester or 32 credits at a high pace per semester, so as to maintain a total score of 96 credits or above in a 2-year programme (4 semesters).

P. G. Department of Zoology
syllabus
University of Kashmir, Srinagar M.Sc
3rd Semester

ZOO-301-CR: GENETICS AND EVOLUTION

Total Credits: 4 (3 Lecture + 1 Tutorial +0 Practical)

Maximum Marks: 100 (25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT I: INHERITANCE BIOLOGY

1.1 Mendelian principles: Dominance, segregation, independent assortment: Deviation from Mendelian inheritance (Codominance, incomplete dominance)
1.2 Gene interactions: Complementary and supplementary ratios; pleiotropy
1.3 Concept of gene: Allele, multiple alleles, pseudoallele, complementation tests
1.4 Extra chromosomal inheritance: Inheritance of mitochondrial and chloroplast genes, maternal inheritance

UNIT II: GENOMICS AND MAPPING

2.1 Genomics, proteomics and human Genome
2.2 Pedigree analysis, lod score for linkage testing, karyotypes, genetic disorders and genetically inherited diseases
2.3 Linkage maps, tetrad analysis, mapping with molecular markers, mapping by using somatic cell hybrids
2.4 Gene manipulation: An overview of DNA cloning, transgenic animals; Recombinant DNA technology– basics and applications

UNIT III: EVOLUTION

3.1 Origin of life on earth
3.2 Modern synthetic theory of organic evolution
3.3 Convergent and divergent evolution
3.4 Speciation: isolating mechanisms

UNIT IV: SEMINAR/ TUTORIALS

Seminar topics will be allotted to the students under the supervision of concerned faculty members and it is mandatory for them to make a presentation of the same.

SUGGESTED BOOKS/READING MATERIAL

1. *Principles of Genetics* by **Gardner et al** John Wiley
2. *Genomes* by **Brown, T. A** Garland Science Publishing, London, UK
3. *Genes IX* by **Benjamin Lewin** Jones and Bartlett Publishers
4. *Molecular Biology of Gene* by **Watson et al** Pearson Education, Delhi, India
5. *Organic Evolution* by **N Arumugam** Saras Publication
6. *Principle of Genome Analysis and Genomics* by Primrose, S. B. and Twyman R. M. Blackwell Publishing

P. G. Department of Zoology
syllabus
University of Kashmir, Srinagar M.Sc
3rd Semester

ZOO-302-CR: CELL AND MOLECULAR BIOLOGY

Total Credits: 4 (3 Lecture + 0 Tutorial +1 Practical)

Maximum Marks: 100 (25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT I: CELL BIOLOGY

1.1 Cellular diversity: Structural features of prokaryotic & eukaryotic cells
1.2 Membrane structure and function: Structure of model membranes, active transport, ion pumps, mechanism of sorting and regulation of intracellular transport
1.3 Cytoskeleton: Microtubules, microtubular organelles and microfilament
1.4 Cell division & cell cycle: Mitosis and meiosis, their regulation & control

UNIT II: CELL SIGNALING AND TRANSDUCTION

2.1 Cell signaling: Signaling molecules and modes of cell-cell signaling
2.2 Cell surface receptors: G- protein coupled receptors, receptor protein-tyrosine kinases, cytokine– receptors and non-receptor protein tyrosine kinases
2.3 Signal transduction pathways: MAP kinase and JAK/STAT pathways
2.4 Cell transduction and cytoskeleton: Integrins and signal transduction, regulation of the actin cytoskeleton

UNIT III: MOLECULAR BIOLOGY

3.1 Mechanism of DNA biosynthesis in prokaryotes
3.2 DNA damage and repair
3.3 Structure & types of RNA and mechanism of its synthesis in prokaryotes
3.4 Protein synthesis and processing

UNIT IV: PRACTCAL WORK

4.1 Preparation of temporary stained mount of the onion root for various mitotic stages
4.2 Preparation of permanent stained mount of the grasshopper or cockroach testis for the various stages of meiotic division
4.3 Isolation and study of giant chromosomes of *Chironomus* larva and *Drosophila* larva
4.4 Slide study of various stages of mitotic and meiotic divisions
4.5 Preparation of stained slides of squamous epithelial/ neutrophil cells and study of Barr body
4.6 Rearing of fruit fly and study of red and white character after crossing

SUGGESTED BOOKS/READING MATERIAL

1. *Molecular Biology of the Cell* by **Alberts *et al.*** Garland Science

P. G. Department of Zoology
syllabus
University of Kashmir, Srinagar M.Sc
3rd Semester

ZOO-303-CR: GENERAL ENTOMOLOGY

Total Credits: 4 (3 Lecture + 0 Tutorial +1 Practical)

Maximum Marks: 100 (25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT I: INSECT MORPHOLOGY

1.1 Integument– structure, composition and modification
1.2 Head– structure and appendages
1.3 Thorax– structure and appendages
1.4 Abdomen and its modifications

UNIT II: INSECT CLASSIFICATION

2.1 Classification of Apterygota with important orders and families
2.2 Classification upto family level of the orders, viz. Odonata, Orthoptera, Dictyoptera, Hemiptera and Phthiraptera
2.3 Classification of Insect orders, viz. Lepidoptera and Diptera, with economically important families
2.4 Classification of Insect orders, viz. Coleoptera and Hymenoptera, with economically important families

UNIT III: INSECT ECOLOGY

3.1 Effects of High-altitude environment on morphology, physiology and development of insects
3.2 Effects of temperature, humidity and light on the activities of insects
3.3 Population dynamics
3.4 Insect-plant interaction

UNIT IV: PRACTICAL WORK

4.1 Taxonomy and identification of insects of economic importance belonging to following insect orders: Collembola, Thysanura, Odonata, Orthoptera, Dictyoptera, Hemiptera and Phthiraptera
4.2 Taxonomy and identification of economically important insects of the orders: Coleoptera, Lepidoptera, Hymenoptera and Diptera
4.3 Permanent whole mount preparation of the following insects: Aphids, Sucking lice, Mosquitoes
4.4 Minor dissection/ permanent mount preparation of head, mouthparts, wings, spiracles, genitalia, pretasus and legs of the following: Grasshopper, Housefly, Mosquito, Honey-bee, Moth and Butterfly.
4.5 Isolation and permanent mount preparation of halters and arista of House fly
4.6 Collection of insects from different localities of Kashmir

SUGGESTED BOOKS/READING MATERIAL

1. *The Insects : Structure and Function* by **R.F. Chapman** Cambridge University Press
2. *Physiological Systems in Insects* by **Marc J. Klowden** Academic Press
3. *Modern Entomology* by **D. B. Tembhare** Himalaya Publishing House
4. *Imm's General Text Book of Entomology* vol. I by **O. W. Richards and R.G. Davis** Springer

5. *Entomology* by **Cedric Gillott** Plenum Press, New York
6. Fundamentals of Entomology by **Richard J. Elizinga**
7. Introduction to Entomology by **Comstock**

ZOO-304-DCE: VETERINARY AND AGRICULTURAL NEMATOLOGY

Total Credits: 3 (2 Lecture + 0 Tutorial +1 Practical)

Maximum Marks: 75 (25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT I: VETERINARY NEMATOLOGY & ACANTHOCEPHALA

1.1 Nematode parasites of fishes with special reference to life cycle, pathogenicity and control of *Rhabdochona guptii*
1.2 Nematode parasites of Aves with special reference to life cycle, pathogenicity and control of *Heterakis gallinarum*
1.3 Nematode parasites of Sheep with special reference to life cycle, pathogenicity and control of *Haemonchus contortus*
1.4 Acanthocephalan parasites of fishes with special reference to *Pomphorhynchus kashmiriensis*

UNIT II: AGRICULTURAL NEMATOLOGY

2.1 Introduction to plant parasitic nematodes with special reference to pathogenicity and control of *Meloidogyne* and *Heterodera*
2.2 Introduction to entomopathogenic nematodes
2.3 Plant resistance to phytoparasitic nematodes
2.4 Management and control of plant parasitic nematodes

UNIT III: PRACTICAL WORK

3.1 Study of prepared slides/ specimens of nematode and acanthocephalan parasites of animals
3.2 Collection, preservation and preparation of permanent mounts of trematodes and cestodes collected from fishes
3.3 Collection, preservation and preparation of permanent mounts of trematodes and cestodes collected fromdomestic fowl
3.4 Collection, preservation and preparation of permanent mounts of trematodes and cestodes collected from ruminant gut
3.5 Methods of extraction of nematodes from soil

SUGGESTED BOOKS/READING MATERIAL

1. *Animal Parasitology* by **J. D. Smyth**
2. *Parasitology (Protozoology & Helminthology)* by **K. D. Chatterjee**
3. *Foundations of Parasitology* by **Gerald D. Schmidt and Larry S. Roberts**

P. G. Department of Zoology
syllabus
University of Kashmir, Srinagar M.Sc
3rd Semester

ZOO-305-DCE: LIMNOLOGY AND INLAND FISHERIES

Total Credits: 3 (2 Lecture + 0 Tutorial +1 Practical)

Maximum Marks: 75(25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT I: LIMNOLOGY

1.1 A general account on high altitude lakes of Jammu and Kashmir; eutrophication in valley lakes
1.2 Fate of heat in water: thermal stratification
1.3 Macro and micro nutrients in water bodies
1.4 Biological communities in inland water bodies (planktonic and benthic)

UNIT II: INLAND FISHERIES

2.1 Riverine fisheries– ecology and effects of dams
2.2 Cold water fisheries– present status and scope for development
2.3 Reservoir fisheries– ecology, development, exploitation and management
2.4 Estuarine Fisheries– present status, potential and management

UNIT III: PRACTICALS

3.1 Determination of temperature, pH and transparency of water bodies
3.2 Determination of dissolved oxygen, free carbon dioxide, total alkalinity of water bodies/ water sample
3.3 Qualitative and quantitative analysis of zooplankton local water bodies
3.4 Permanent slide preparation of planktons from local water bodies
3.5 General characters and classification of important riverine, reservoir and estuarine fishes

SUGGESTED BOOKS/READING MATERIAL

1. *Textbook of Limnology* by **Goldman and Horne** McGraw Hill Higher Education
2. *Limnology: Lake and River Ecosystems* by **By Robert G. Wetzel** Academic Press
3. *Fundamentals of Limnology* by **Arvind Kumar** Ashish Publishing House
4. *Advances in Limnology* by **H.R. Singh** Narendra Publishing House
5. *Fish and Fisheries of India* by **V. G. Jhingram** Hindustan Publishing Corporation
6. *Ecology and Field Biology* by **Robert Leo Smith** Harper & Row, Publisher

P. G. Department of Zoology
syllabus
University of Kashmir, Srinagar M.Sc
3rd Semester

ZOO-306-DCE: ECONOMIC ENTOMOLOGY

Total Credits: 3 (2 Lecture + 0 Tutorial +1 Practical)

Maximum Marks: 75 (25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT I: AGRICULTURAL ENTOMOLOGY

Insect pests with emphasis on the occurrence, economic importance, life cycle and control of only one major pest of the following crops

1.1 Vegetables-brassicas
1.2 Food crops- Paddy, Wheat and Maize
1.3 Stored-grains
1.4 Fodder and Forage

UNIT II: HORTICULTURAL AND FOREST ENTOMOLOGY

Insect pests with emphasis on the occurrence, economic importance, life cycle and control of only one major pest of the following crops

2. I Temperate fruits (Pome and Stone)
2.2 Forest pests
2.3 Salix and poplars
2.4 General polyphagous pests– Locusts, termites and aphids

UNIT III: PROJECT WORK

A survey project related to economic entomology (agricultural, horticultural and sylvicultural) will be allotted to each student which is mandatory and has to be submitted by the student up to the end of August.

SUGGESTED BOOKS/READING MATERIAL

1. *Modern Entomology* by **D. B. Tembhare** Himalaya Publishing House
2. *A text book of Applied Entomology –vol. II* by **K.P. Srivastava** Kalyani Publishers
3. *A text book of Applied Zoology* by **Pradip V. Jabde**

P. G. Department of Zoology
syllabus
University of Kashmir, Srinagar M.Sc
3rd Semester

ZOO-307-DCE: CONSERVATION BIOLOGY, ECOTOURISM AND CAPTIVE BREEDING

Total Credits:3 (2 Lecture + 0 Tutorial +1 Practical)

Maximum Marks: 75 (25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT 1: CONSERVATION BIOLOGY

1.1 IUCN protected area categories, Marine protected areas, Transfrontier Protected areas
1.2 Important National parks, Sanctuaries and Biosphere reserves of India and their characteristic wildlife
1.3 Minimum viable populations, Conservation of rare and key stone species
1.4 In situ and ex situ conservation, gene banking

UNIT 2: ECOTOURISM AND CAPTIVE BREEDING

2.1 Ecotourism development in India
2.2 Ecotourism potential of wildlife habitats of Jammu and Kashmir
2.3 Captive breeding: procedures and requirements
2.4 Captive breeding programs in India

UNIT III: PROJECT WORK

A project related to the following topics/parameters will be allotted to each student which is mandatory and has to be submitted by the student up to the end of August:

1. Important wildlife issues
2. Conservation status of important mammals and birds
3. Mammal and bird diversity of important habitats of J & K
4. Anthropogenic interferences in wildlife habitats

SUGGESTED BOOKS/READING MATERIAL

1. *Fundamentals of wildlife Management* -2nd edition) **Rajesh Gopal** (2012) Natraj Publishers, Dehradun India
2. *Wilderness Wildlife* **G. A. Bhat** (2008) Book Vision Hazratbal Srinagar

3. *The Book of Indian Reptiles*, **Daniel J.C**. (1983) Bombay Natural History Society, Bombay
4. *Reptiles and Amphibians*, **Richard Oulahan** 1977 Time-Life Films, Inc.USA
5. *The Life of Vertebrates*, **Young J. Z**. (1962) Oxford University Press London
6. *Biology and Comparative Physiology of Birds* **A. J. Marshall** (1961) Academic Press, New York

ZOO-308-GE: CLINICAL PARASITOLOGY AND IMMUNOLOGY

Total Credits: 3 (2 Lecture + 0 Tutorial +1 Practical)

Maximum Marks: 75 (25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT I: CLINICAL PARASITOLOGY

1.1 Coprological examination techniques
1.2 Blood and urine examination techniques
1.3 Histological techniques in parasitology
1.4 Culture of parasite; eggs and larvae

UNIT II: IMMUNOLOGY

2.1 Introduction about immune system
2.2 Immunodeficiency diseases
2.3 Hypersensitivity reactions; Mechanism of cytotoxic reactions
2.4 Autoimmune diseases: Autoimmune anaemia & Systemic lupus erythromatosis

UNIT III: PRACTICAL WORK

3.1 Examination of faecal samples of animals for diagnosis of helminth diseases
3.2 Examination of blood of certain vertebrate hosts for the presence of parasites
3.3 Microtomy of helminth parasites
3.4 Micrometry
3.5 Demonstration of antigen-antibody reaction through Haem-agglutination

SUGGESTED BOOKS/READING MATERIAL

1. *Immunology* by **Kuby, J., Goldsby, R., Kindt, T.J. and Osbourne, B.A., W.H. Freeman**
2. *Medical Immunology for Students* by **Playfair, J.H.L. and Lydyard, P.M. Churchill**

3. *Immunology* by **Roitt, I.M., Brostoff, J. and Male, D. Mosby**
4. *Basic Immunology* by **Sharon, J. William and Wilkins**
5. *Immunology* by **P. M. Lydyard, A. Whelan And M. W. Fanger**
6. *Immunology* by **F. M. Burnet**

ZOO-309-GE: CONSERVATION BIOLOGY AND WILDLIFE RESOURCE MANAGEMENT

Total Credits: 3 (2 Lecture + 0 Tutorial +1 Practical)

Maximum Marks: 75 (25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT I: CONSERVATION BIOLOGY

1.1 IUCN protected area categories, Marine protected areas, Transfrontier Protected areas
1.2 Protected area network in India
1.3 Minimum viable populations, conservation of rare and key stone species
1.4 In situ and ex situ conservation

UNIT II: WILDLIFE RESOURCE MANAGEMENT

2.1 Wildlife Protection Act (1972), its brief structure and recent amendments
2.2 Wildlife protection act of J & K– an overview
2.3 Conservation projects in India
2.4 Wildlife conventions and organizations: Ramsar, Bonn, CITES, IUCN, WWF, BNHS

UNIT III: PRACTICAL WORK

3.1 Visit to important wildlife habitats of J & K to study different habitat aspects and to identify the animals in the field
3.2 Study of species diversity by various methods
3.3 Study of vegetation by quadrat method to determine frequency, density, abundance and distribution pattern

3.4 Study of pugs and hooves of wild animals in the field
3.5 Operation of GPS, field binoculars and digital camera

SUGGESTED BOOKS/READING MATERIAL

1. *Fundamentals of wildlife Management* -2nd edition) **Rajesh Gopal** (2012) Natraj Publishers, Dehradun India
2. *Wilderness Wildlife* **G. A. Bhat** (2008) Book Vision Hazratbal Srinagar
3. *The Book of Indian Reptiles*, **Daniel J.C**. (1983) Bombay Natural History Society, Bombay
4. *Reptiles and Amphibians*, **Richard Oulahan** 1977 Time-Life Films, Inc.USA
5. *The Life of Vertebrates*, **Young J. Z**. (1962) Oxford University Press London
6. *Biology and Comparative Physiology of Birds* **A. J. Marshall** (1961) Academic Press, New York

ZOO-310-OE: FISH FEED, MANAGEMENT AND CULTURE

Total Credits: 2 (2 Lecture + 0 Tutorial +0 Practical)

Maximum Marks: 50 (25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT I: FISH FEED AND MANAGEMENT

1.1 Artificial food and feeding
1.2 Fish feed formulation
1.3 Rational fishery
1.4 Methods of fish transport and management

UNIT II: FISH CULTURE

2.1 Trout culture
2.2 Carp & Cat fish culture
2.3 Composite fish farming/polyculture
2.4 Integrated fish farming

SUGGESTED BOOKS/READING MATERIAL

1. A Text Book of Fish Biology & Fisheries by **S S Khanna and H R Singh** Narendra Publishing House

2. An Introduction to Fishes by **H.S. Bhamrah, Kavita Juneja** Anmol Publications Pvt Ltd
3. Fish and Fisheries by **Yadav, B N** Daya Publishing House
4. Fishes: An Introduction to Ichthyology by **Peter B. Moyle Joseph J. Cech Jr**., Prentice Hall India Learning Private Limited
5. Aquaculture - Principles and Practices by **T. V. R. Pillay** Wiley-Blackwell; New edition edition
6. Fish and Fisheries of India by **V. G. Jhingram** Hindustan Publishing Corporation

ZOO-311-OE: BENEFICIAL AND HARMFUL INSECTS

Total Credits: 2 (2 Lecture + 0 Tutorial +0 Practical)

Maximum Marks: 75 (25/Credit)* [Marks Distribution: 20% Internal Assessment & 80% End Semester Exam.]
Minimum Marks: 40% (Internal Assessment and End Semester Exam. to be Qualified Separately, not in Aggregate)
*Note: One unit is equivalent to one credit.

UNIT I: BENEFICIAL INSECTS

1.1 Insects as human food
1.2 Insects as pollinators
1.3 Insects in medicine
1.4 Role of insects in forensic science

UNIT II: HARMFUL INSECTS

2.1 Household insects
2.2 Occurrence, life cycle and control of some major insect pests on apple in Kashmir
2. 3 Damage, life cycle and migratory behavior of locusts

SUGGESTED BOOKS/READING MATERIAL

P. G. Department of Zoology
syllabus
University of Kashmir, Srinagar **M.Sc**
3rd Semester

1. *Modern Entomology* by **D. B. Tembhare** Himalaya Publishing House
2. *A text book of Applied Entomology –vol. II* by **K.P. Srivastava** Kalyani Publishers
3. *A text book of Applied Zoology* by **Pradip V. Jabde**