

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR – 639 005

B.Sc., ZOOLOGY COURSE STRUCTURE UNDER CBCS SYSTEM

(For the candidates admitted from the year 2011-12 onwards)

SEMESTER	COURSE	SUBJECT TITLE	SUBJECT CODE	INSTR. HOURS WEEK	CREDIT	EXAM HOURS	MARKS		TOTAL
							INT	ESE	
I	Tamil - I	Tamil – I	U11L1T1	6	3	3	25	75	100
	English - I	English – I	U11L1E1	6	3	3	25	75	100
	Core Course – I	Invertebrata	U11ZO1C1	6	5	3	25	75	100
	Core Course – II	Practical – I (For CCI & III)	-	3	-	-	-	-	-
	First Allied Course-I	Allied Chemistry - I	U11CH1A1	5	3	3	25	75	100
	First Allied Course – II	Allied Chemistry – II (Practical)	-	2	-	-	-	-	-
	Environmental Studies	Environmental Studies	UES1	2	2	3	25	75	100
				30	16				500
II	Tamil – II	Tamil – II	U11L2T2	6	3	3	25	75	100
	English – II	English – II	U11L2E2	6	3	3	25	75	100
	Core Course – II	Practical – I (For CC I & III)	U11ZO2C2P	3	4	3	25	75	100
	Core Course – III	Chordata	U11ZO2C3	6	5	3	25	75	100
	Allied Course - II	Allied Chemistry – II (Practical)	U11CH2A2P	2	4	3	25	75	100
	Allied Course – III	Allied Chemistry - III	U11CH2A3	5	3	3	25	75	100
	Value Education	Value Education	UVE2	2	2	3	25	75	100
				30	24				700
III	Tamil - III	Tamil- III	U11L3T3	6	3	3	25	75	100
	English – III	English -III	U11L3E3	6	3	3	25	75	100
	Core Course – IV	Cell and Molecular Biology	U11ZO3C4	6	5	3	25	75	100
	Core Course V	Practical – II (For CC IV & VI)		3	-	-	-	-	-
	Second Allied Course-I	Allied Botany – I	U11BO3A1	5	3	3	25	75	100
	Second Allied Course II	Allied Botany II – (Practical)		2	-	-	-	-	-
	Non Core Elective I	Herbal Botany	U11BO3N1	2	2	3	25	75	100
				30	16				500
IV	Tamil – IV	Tamil- IV	U11L4T4	6	3	3	25	75	100
	English – IV	English -IV	U11L4E4	6	3	3	25	75	100
	Core Course – V	Practical – II (For CC IV & VI)	U11ZO4C5P	5	5	3	25	75	100
	Core Course VI	Genetics and Microbiology	U11ZO4C6	2	4	3	25	75	100
	Second Allied Course II	Allied Botany – II (practical)	U11BO4A2P	2	4	3	25	75	100
	Second Allied Course III	Allied Botany – III	U11BO4A3	5	3	3	25	75	100
	Skill Based Elective I	Sericulture	U11ZO4S1	2	4	3	25	75	100
	Non Core Elective II	Horticulture	U11BO4N2	2	2	3	25	75	100
				30	28				800
V	Core Course – VII	Physiology and Biochemistry	U11ZO5C7	5	5	3	25	75	100
	Core Course – VIII	Biotechnology	U11ZO5C8	5	4	3	25	75	100
	Core Course – IX	Biophysics, Biostatistics and Computer applications in Biology	U11ZO5C9	5	4	3	25	75	100
	Core Course - X	Practical III (For CC VII to IX)		3	-	-	-	-	-
	Core Course - XI	Practical IV (For CC XII to XIII)		3	-	-	-	-	-
	Elective Course I	Aquaculture	U11ZO5E1	5	5	3	25	75	100
	Skill Based Elective II	Apiculture	U11ZO5S2	2	4	3	25	75	100
	Skill Based Elective III	Vermiculture	U11ZO5S3	2	4	3	25	75	100
				30	26				600
VI	Core Course - X	Practical III (For CC VII to IX)	U11ZO6C10P	3	4	3	25	75	100
	Core Course – XI	Practical IV (For CC XII to XIII)	U11ZO6C11P	3	5	3	25	75	100
	Core Course – XII	Ecology and Evolution	U11ZO6C12	6	5	3	25	75	100
	Core Course – XIII	Developmental biology and immunology	U11ZO6C13	6	5	3	25	75	100
	Elective Course II	Entomology	U11ZO6E2	5	5	3	25	75	100
	Elective Course III	Poultry Science	U11ZO6E3	6	4	3	25	75	100
	Extension Activities	Extension Activities			1				
	Gender Education	8UEA6	1	1	3	25	75	100	
				30	30				700
TOTAL				180	140				3800

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BOARD OF STUDIES IN ZOOLOGY**

CONTROLLER OF EXAMINATIONS

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05**B.Sc., ZOOLOGY – I SEMESTER – CORE COURSE - I**

(For the candidates admitted from 2011-12 onwards)

INVERTEBRATA

- UNIT- I** **PHYLUM PROTOZOA:** General Characteristics and classification up to class level giving examples. Detailed Study: Paramoecium, General Topics: Protozoan Parasites – Plasmodium & Entamoeba – Life History, Pathogenesis and Control Measures.
- UNIT- II** **Phylum Porifera:** General Characters and classification up to class level giving examples. Detailed Study: Ascon sponge, General topics: Canal System in Sponges **Phylum Coelenterata:** General Characters and Classification up to class level giving examples. Detailed Study: Obelia. General Topics: Polymorphism in Hydrozoa. Corals & Coral Reef.
- UNIT-III** **Phylum Platyhelminthes:** General Characters and Classification up to class level giving examples. Detailed study: Fasciola hepatica, General topics: Parasitic adaptations. **Phylum Nematelmithes;** General characters and classification up to class level giving examples. Detailed Study: Ascaris lumbricoides. General Topics: Nematode parasites.
- UNIT-IV** **Phylum Annelida:** General Characters and classification up to class level giving examples Detailed Study: Nereis. General topics: Excretion in Annelids. **Phylum Arthropoda:** General characters and classification up to class level giving examples. Detailed Study: Penaeus General topics: Crustacean Larvae and Mouth Parts of Insects.
- UNIT-V** **Phylum Mollusca:** General Characters and Classification up to class level giving examples. Detailed study: Pila. General topics: Torsion in Molluscus. **Phylum Echinodermata:** General Characters and Classification up to class level giving examples. Detailed Study: Larval forms in Echinoderms.

Text Book:

Title	Author	Publisher
A Text Book of Invertebrates.	Arumugam et al,	

Reference Book:

Title	Author	Publisher
A Manual of Zoology Vol. I	Ekambarathanatha Iyar and Ananthkrishnan. T. N	
Invertebrates Structure and Function	Barrington. E. J. W.	
Invertebrates.	Barnes, R.D	
A Text Book of Invertebrates	Kotpal, R.L.	

Sl. No.: 12P9

Subject Code: U11ZO2C2P

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05

B.Sc., ZOOLOGY – I & II SEMESTER – CORE COURSE –II

(For the candidates admitted from 2011-12 onwards)

PRACTICAL - I

INVERTEBRATA, CHORDATA

DISSECTIONS : Earthworm Nervous System
Cockroach – Digestive System, Nervous System
Fish – General Anatomy & Digestive System
Shark / Frog – Digestive, Arterial and Venous
Demonstration adopting CDs / Web sources.

MOUNTINGS : Earthworm – Body & Penial setae.
Mosquito
Honey Bee – Mouth Parts
Fish – Placoid, Cycloid & Ctenoid scales.

SPOTTERS :

INVERTEBRATES : Amoeba, Euglena Paramoecium, Ascon and Euplectalla sponge, Sponge – gemmule, Obelia-colony, Physalia, Ephyra larva, Sea anemone, Fasciola hepatica, Cercaria and Redia larvae. Teania solium, Teania – scolex, Planaria, Ascaris – male & female). Microfilaria Earthworm, Neries, Neries-Parapodium, Neries – T.S. Lecch – Entire and T.S. Trochophore larva, Prawn, Scorpion, Peripatus. Freshwater mussel, Pila, Sepia, Star-fish, Sea-urchin, Pedicellaria and Sea-cucumber, chiton, Octopus, Ophiopluteus larva Bipinnaria larva

PROCHORDATES : Amphioxus, Ascidia, Balanglossus, Tornaria larva.

CYCLOSTRUE : Peteromyzon

PISCES : Scoliodon, Trygon, Narcine, Clarias, Gambusia, Echineis. Hippocampus (Male), Synapta, Exocoetus, Anabas, Protopterus,

AMPHIBIA : Rana, Alytes, Hyla, Salamander, Ichthyophis, Axolotl larva

REPTELAA : Calotes, Draco, Varanus, Naja naja, Vipera russelli.

AVES : King fisher, Parrot, Pigeon

MAMMALIA : Rat, Bat, Rabbit, Loris, Duck billed Platypus

DENTITION : Rabbit, Dog & Man

OSTEOLOGY : Pigeon-Synsacrum, Rabbit-Pectoral and Pelvic girdles, Fore limb & Hind, limb bones

A record of laboratory work shall be submitted at the time of Practical Examination

Mark distribution for the Practical Examination:

1. Major Practical (Invertebrata / Chordata)	: 25
2. Mounting	: 10
3. Spotters: (Invertebrata -3 Chordata – 3)	: 30
4. Record	: 10
Total	: 75

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CONTROLLER OF EXAMINATIONS

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-05**B.Sc., ZOOLOGY – II SEMESTER – CORE COURSE -III**

(For the candidates admitted from 2011-12 onwards)

CHORDATA

- UNIT- I** General Characters of Chordata and its outline classification up to class level.
Detailed Study: Prochordata – Balanoglossus.
General Topics: Retrogressive Metamorphosis, and origin of chordates.
- UNIT- II** General Characters and Classification of Cyclostomes and Pisces up to order level.
Detailed Study: *Petromyzon and scolidon*. (Excluding endoskeleton)
General Topics: 1. Accessory Respiratory organs in Fishes.
2. Migration of fishes and
3. Parental care in fishes.
- UNIT-III** General Characters and Classification of Amphibia and Reptilia up to order level.
Detailed Study: *Rana and Calotes*. (Excluding endoskeleton)
General Topics: 1. Gymnophiana and their affinities
2. Parental care in Amphibia.
3. Identification of Poisonous and Non-poisonous Snakes.
4. Sphenodon as living fossil.
- UNIT-IV** General characters and classification of Aves upto order level.
Detailed Study : *Columba* (Excluding endoskeleton)
General Topics: 1. Origin of birds 2. Flightless birds and their distribution
3. Flight adaptations in birds.
- UNIT-V** General characters and classification of Mammalia up to order level.
Detailed study: *Oryctolagus* (Excluding endoskeleton)
General Topics: 1. Aquatic mammals and their adaptations 2. Prototheria and Metatheria 3. Dentition in Mammals 4. Stomach in Mammals.

Text Book:

Title	Author	Publisher
A text book of Chordates	Arumugam et al,	Saras Publications

Reference Books:

Title	Author	Publisher
A Manual of Zoology Vol.II	Ekambarathanatha Iyar& Ananthakrishnan. T.N.,	
A Text book of Chordates	Kotpal, R.L.,	

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY - III SEMESTER – CORE COURSE -IV
(For the candidates admitted from 2011-12 onwards)

CELL AND MOLECULAR BIOLOGY

- UNIT- I** Microscopy – Principles construction and application of light and electron microscopes (SEM and TEM), Phase contrast and fluorescent microscopes. Centrifugation – Differential and Density gradient centrifuges: Principles, types and application. Cell types – Viruses, prokaryotic and eukaryotic cells – Cells – ultra structural organization.
- UNIT- II** Plasma membrane – Ultra structure – Unit membrane model – fluid mosaic model and functions – Permeability, osmosis, passive transport, active transport, permease system, endocytosis, exocytosis; modifications of plasma membrane. Cytoplasm – Physical and biological properties. Endoplasmic Reticulum ultra structure types and functions.
- UNIT-III** Golgi complex – Morphology, structure, role in secretion and other functions. Lysosome and centrosome – Morphology, chemistry and functions. Mitochondria – Ultrastructure, mDNA, and functions, oxidative phosphorylation, Krebs's cycle, fatty acid oxidation, ATP production.
- UNIT-IV** Ribosome-Structure and functions.Ultra Structure of interphase nucleus and nucleolus: Chromosome – Structure and functions; giant chromosomes. Cell division – mitosis and meiosis; Cell cycle.
- UNIT-V** Molecular Structure of DNA: DNA replication and repair mechanism; RNA – Types; transcription and translation; genetic code; Cancer Biology.

Text Book:

1. Cell Biology, by Arumugam, Saras Publications

Reference Books:

1. DeRobertis, E.D.P and E.M.F. DeRobertis, 1987, Cell and Molecular Biology.
2. Power, C.B. 1989, Essentials of Cytology, Himalaya Publishing House.
3. Verma, P.S. and V.K. Agarwal, 1985, Cytology, S. Chand & Co.

Sl. No.: 1343

Subject Code: U11ZO3A1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5

B. Sc. III SEMESTER – SECOND ALLIED COURSE – I

(FOR BOTANY & CHEMISTRY MAJOR ONLY)

(For the candidates admitted from 2011-12 onwards)

BIOLOGY OF INVERTEBRATES AND CHORDATES

A) BIOLOGY OF INVERTEBRATES

UNIT- I General Characters of the Phyla based on the following types
Phylum Protozoa – *Paramoecium*
Phylum Coelenterata – *Obelia*.

UNIT- II General Characters of the Phyla based on the following types.
Phylum Platyhelminthes – *Fasciola hepatica*
Phylum Nematelminthes – *Ascaris lumbricoides*
Phylum Annelida – *Megascolex*

UNIT-III General Characters of the Phyla based on the following types
Phylum Arthropoda – *Penaeus*
Phylum Mollusca – *Lamellidens*
Phylum Echinodermata – *Asterias*.

B) BIOLOGY OF CHORDATES

UNIT-IV General characters of the classes based on the following types
Class Pisces – *Scoliodon*; Class Amphibia – *Rana*; Class Reptilia – *Calotes* –
Morphology, digestive, respiratory, circulatory, nervous system, sense organs,
excretory and reproductive system.

UNIT-V General Characters of the classes based on the following types.
Class Aves – *Columba*; Class Mammalia – *Oryctolagus* – Morphology,
digestive, respiratory, circulatory, nervous system, sense organ, excretory and
reproductive system.

Text Books:

1. Text Book of Invertebrates, Arumugam, N. Saras Publications, Nagercoil
2. Text book of Chordates, Arumugam, N. Saras Publications, Nagercoil.

Reference Books:

1. Outlines of Zoology – M. Ekambaranatha Ayyar – Viswanathan Publications.
2. A Manual of Zoology, Vol I & II M. Ekambaranatha Ayyar – Viswanathan Publications.

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Sl. No.: 1344

Subject Code: U11ZO3N1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc., BOTANY - III SEMESTER – NON-CORE ELECTIVE - I
(For the candidates admitted from 2011-12 onwards)

ECONOMIC ENTOMOLOGY

- UNIT-I** Scope and Importance Economic Entomology – Economic Importance of Insects and their classification.
- UNIT- II** Insect Relation to Public Health – Mosquito and Housefly; Household insect pests – Ant Termite and Cockroach – Damage caused and control measures.
- UNIT-III** Beneficial Insects – Economic Importance of Honeybee, Silkworm and Lac insect; Insect pollinators, Parasites, Predators and Scavengers.
- UNIT-IV** Pest – Definition, Kinds of pest; Insect pests – classification, Injuries and damages caused by insect pests, Destructive Insects – Bionomics and Life cycle of the common insect pests of Paddy, Coconut and Brinjal; Common pests of Stored products.
- UNIT-V** Integrated Pest Management: - Methods and Principles of Pest Control – Natural, Mechanical, Physical, Chemical and Biological control methods.

Reference books:

1. Vasantharaj David, B., 2005, Elements of Economic Entomology, Popular Book Depot, Chennai.
2. Krishnan, N.T., 1993, Economic Entomology, J.J. Publications, Madurai.
3. Ramakrishnan Ayyar, T.V., 1984, Hand Book of Economic Entomology for South India, International Books and Periodicals Supply Service, New Delhi.

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CONTROLLER OF EXAMINATIONS

Sl. No.: 14P12

Subject Code: U11ZO4C5P

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY – IV – SEMESTER - CORE COURSE - V
(For the candidates admitted from 2011-12 onwards)

PRACTICAL – II (FOR CC IV & VI)

CELL & MOLECULAR BIOLOGY AND GENETICS & MICROBIOLOGY

CELL AND MOLECULAR BIOLOGY

1. Onion Root Tip - squash preparation to study different stages of Mitosis
2. Grasshopper Testis - Squash preparation to study different stages of Meiosis
3. Chironomus Larva - Mounting of Salivary glands and study of Giant Chromosomes.
4. Buccal smear preparation

Spotters:

- | | | |
|--------------------------|-------------------------|------------------------|
| 1. Columnar epithelium | 2. Ciliated epithelium | 3. Squamous epithelium |
| 4. Glandular epithelium | 5. Cardiac Muscle | 6. Striated Muscle |
| 7. Non – Striated Muscle | 8. Bone Tissue | 9. Blood of Man |
| 10. Blood of Frog | 11. Compound microscope | |

GENETICS

1. Recording of Mendelian traits in Man.
2. Drosophila - Male and Female Identification
3. Human Karyotypes : Normal Male, Down Syndrome, Klinefelter's and Turner's Syndrome
4. Pedigree Analysis.

MICROBIOLOGY

1. Serial dilution technique
2. Fixing and Staining of Bacteria – Simple & Gram Staining.
3. Measurement of microbe using micrometer.

Spotters:

- | | | | |
|-----------------------------|----------------|---------------------|-----------------|
| 1. Autoclave | 2. Petri plate | 3. Inoculation Loop | 4. Micropipette |
| 5. Bacterial colony counter | 6. Centrifuge | | |

A record of Laboratory Work shall be submitted at the time of Practical Examination.

Mark distribution for the Practical Examination:

1. Major Practical (Microbiology / Cell Biology)	: 25
2. Minor Practical (Microbiology / Cell Biology)	: 10
3. Spotters (Cell Biology – 2, Genetics – 2, Microbiology -2) (6x5)	: 30
3. Record	: 10
Total	: 75

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY – IV SEMESTER - CORE COURSE - VI
 (For the candidates admitted from 2011-12 onwards)

GENETICS AND MICROBIOLOGY

GENETICS

- UNIT-I** Linkage, Crossing over Definition – Mechanism with *Drosophila* as example; Multiple alleles: Blood groups and their inheritance. Sex determination – Chromosomal, Environmental and hormonal basis of sex determination. Chromosome – Structural and Numerical Changes – Mutation-types & induced mutation.
- UNIT- II** Molecular Genetics: Fine structure of gene-cistron, recon and muton – gene expression and regulation in prokaryotes – operon model. Biochemical Genetics – Inborn errors of metabolism in man, sickle cell anaemia. Pedigree analysis and Genetic counselling.
- UNIT-III** Microbial genetics: DNA as the genetic material Recombination in bacteria Transformation, conjugation sexduction – Transduction – lytic and lysogenic cycles.

MICROBIOLOGY

- UNIT-IV** Introduction, history and scope of microbiology – General structure of bacteria and virus – Outline classification of each group and identification – Bacterial growth, culture media, continuous and batch culture techniques, bacterial growth curve. Food Microbiology: food poisoning, food spoilage, food preservation.
- UNIT-V** Industrial microbiology: Production of antibiotics with reference to penicillin, industrial production of methanol. Soil microbiology: role of soil microbes in Nitrogen fixation. Medical microbiology: Diseases caused by bacteria; cholera, tuberculosis, leprosy, tetanus, viruses; jaundice, small pox, AIDS, Poliomyelitis, causative organism, symptoms, impact on the host and control measures.

Text Book:

1. Arumugam, N, 2005. Genetics, Saras Publications, Nagercoil
2. Mani et al., 2005. Microbiology, Saras Publications, Nagercoil

References:

1. Friefelder, D., 1997, Microbial genetics; Narosa Publishing, New Delhi
2. Lewin, B.2007, Gene VIII, Wiley Eastern Ltd., New Delhi.
3. Rothwell, N.V. 1989, Human genetics. Prentice Hall of India, New Delhi
4. Verma, P.S. and V.K. Agarwal, 2002, Genetics, S.Chand & Co. New Delhi.
5. Strickberger, M.W., 2005 Genetics, Prentice Hall of India, New Delhi.
6. Power C.B. and H.F. Dagainawala, 1997, General Microbiology, Himalayas Publications, New Delhi.

Sl. No.: 14P13

Subject Code: U11ZO4A2P

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. –IV SEMESTER – SECOND ALLIED COURSE – II
(FOR BOTANY & CHEMISTRY MAJOR ONLY)
(For the candidates admitted from 2011-12 onwards)

ALLIED ZOOLOGY PRACTICAL - I

1. DISSECTIONS:

Earth worm – Nervous System.
Cockroach – Digestive System, Nervous System.
Teleost Fish – Digestive System.

2. MOUNTINGS:

Earthworm – Body setae & Penial setae.
Cockroach – Mouth Parts.
Honey Bee – Mouth Parts.
Shark – Placoid Scales
Any Carp – Cycloid & Ctenoid Scales.

3. SPOTTERS:

Amoeba, Paramoecium, Ascon sponge, Obelia colony, Metridium, Ascaris, Fasciola hepatica, Taenia solium, Planaria, Megascolex, Nereis, Nereis T.S., Leech, Leech T.S, Penaeus, Palamnaeus, Grasshopper, Peripatus, Lamellidens, Pila, Sepia, Asterias, Echinus, Holothuria, Amphioxus, Ascidian, Shark, Anabas, Exocoetus, Echeneis, Rana, Salamander, Calotes, Chelone, Naja Naja, Vipera russellii, Columba, Psittacula, Rattus, Oryctolagus, Pteropus.

4. Species of animals used in Vermiculture, Apiculture, Sericulture, Aquaculture and Poultry farming.

5. Products: Vermicompost, Honey, Bee's wax, Silk, Cod liver oil, Abnormal Eggs of poultry birds.

A record of laboratory work should be submitted at the time of Practical examination.

Mark distribution for the Practical Examination:

1. Dissection	: 25
2. Mounting	: 15
3. Spotters (5x5)	: 25
4. Record	: 10
Total	: 75

Sl. No.: 1454

Subject Code: U11ZO4A3

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-5

B.Sc. – IV SEMESTER- SECOND ALLIED COURSE - III

(For the candidates admitted from 2011-12 onwards)

(FOR BOTANY & CHEMISTRY MAJOR ONLY)

ALLIED ZOOLOGY - III

(COMMERCIAL ZOOLOGY)

- UNIT-I Vermiculture and composting:** Types of earthworm – Significance – Rearing – Rearing technology – Management – Economic importance – Composting.
- UNIT-II Apiculture:** Species of Honey bees – Newton’s Bee hive – Care and management – Honey extraction – Economic importance – Nutritive and medicinal values of honey.
- UNIT-III Sericulture:** Feeding habits of larvae – Life cycle of silk worm (*Bombyx mori*) – Economic importance of silk worm and silk.
- UNIT-IV Aquaculture:** Construction of pond – Management of pond – Freshwater cultivable fishes – Fish feed – Induced breeding – fish diseases (Furunculosis, Epizootic Ulcerative syndrome (EUS) and Vibriosis).
- UNIT-V Poultry farming:** Types of poultry – Management – Poultry nutrition – diseases and their prevention – Economics of poultry production.

Text Book:

1. G.S.Shukla and V.B.Upadhyay – Economic Zoology, Rastogi Publications.
2. Thiyagarajan, S. 2000 – Commercial Zoology, Tee Jay Publication, Thanjavore (Tamil version)

Reference Books:

1. J.Ashan and S.P. Sinha – A hand book of Economic zoology – S. Chand & Co
2. Sardar Singh – Bees Keeping in India
3. Santhanam – Aquaculture.
4. Ullal, S.R. and M. N. Narasimhan – Central Silk Board, Govt. of India, Mumbai.
5. Singh – Livestock and Poultry Production
6. Manju Yadav, 2003. Economic zoology, Discovery Publishing House, New Delhi
7. Rose, S.P., Principles of Poultry science, C & B International
8. Ismail, S. Vermiculture.

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Sl. No.: 1455

Subject Code: U11ZO4S1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY – IV SEMESTER - SKILL BASED ELECTIVE - I
(For the candidates admitted from 2011-12 onwards)

SERICULTURE

- UNIT- I** Scope and history of Sericulture, Development of sericulture in India, Types of mulberry and non-mulberry silk industries; Economic importance.
- UNIT- II** Mulberry cultivation – Environmental conditions required for cultivation; Mulberry varieties in Tamil Nadu; Methods of propagation – irrigation, manuring and application of artificial fertilizers; Pruning, mulching, harvesting and preservation of leaves; Diseases and pests of mulberry.
- UNIT-III** Morphology of silkworm – larva, pupa and adult; Physiology of silk gland; Life cycle of Bombyx mori; Rearing facilities – rearing house, appliances, rearing operation; Seed production – hatching, brushing, feeding, bed cleaning, spacing; Rearing later stages of silkworm.
- UNIT-IV** Mounting of silkworm for spinning of cocoons – methods of mounting, harvesting cocoons, Quality of cocoons; Silk reeling industry and commercialization; Diseases – cause symptoms, prevention and control and pests of silk worm – damage caused, prevention and control measures.
- UNIT-V** Reeling of cocoons – process of reeling, stifling, and storage and deflossing; Reeling equipments, Utility of byproducts of mulberry of plant, silkworm excreta, pupa and silk waste.

Text Books:

1. Ganga, G. and Sulochana Shetty, J., 1998, An Introduction to sericulture 2nd edn. Oxford & IBH.

Reference Books:

1. FAO, 1992, Sericulture Manual – 2 (silk worm rearing), Oxford & IBH.
 2. FAO, 1994, Sericulture Manual – 2 (silk reeling), Oxford & IBH
 3. FAO, 1993, Silk worm egg production, Oxford & IBH.
- FAO, 1996, Silk worm rearing diseases, Oxford & IBH

Sl. No.: 1456

Subject Code: U11ZO4N2

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-5
B.Sc. BOTANY – IV SEMESTER -NON CORE ELECTIVE - II
(For the candidates admitted from 2011-12 onwards)

COMMUNICABLE DISEASES AND MANAGEMENT

- UNIT-I** Classification of communicable diseases, Mode of transmission. Viral diseases – Polio, Rabies, Yellow fever, Mumps, Influenza, Measles, Encephalitis, Hepatitis and AIDS – Causes, symptoms, prevention and cure.
- UNIT- II** Bacterial diseases: Dysentery, Cholera, Tuberculosis, Tetanus, Diphtheria, Typhoid, STD and Leprosy – causes, symptoms, prevention and cure.
- UNIT-III** **Protozoan Diseases:** Amoebiasis, Leishmaniasis, Trichomoniasis and Malaria – Causes, symptoms, prevention and cure.
- UNIT-IV** **Helminth Parasites:** Taeniasis, Ascariasis, Ancylostomiasis, Encephalitis, and Filariasis – Causes, symptoms, prevention and cure.
- UNIT-V** **Vaccines:** Vaccination schedule for pregnant mothers and children.

Text Books:

1. Park, K. 2005 Park's Text book of Preventive and Social Medicine, M/s Banarsidas Bhanot, Publishers, Jabalpur, India, 18 Ed.,
2. Kotpal, 2007, Invertebrate Zoology.

Reference Books:

1. Deepak Kumar, 2001, Diseases and Medicines in India; A Historical Overview, Tulika, New Delhi
2. Turk and Turk, Text Book of Social and Preventive Medicine

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY – V SEMESTER -CORE COURSE - VII
(For the candidates admitted from 2011-12 onwards)

PHYSIOLOGY AND BIOCHEMISTRY

- UNIT- I** Nutrition – types; Digestion in man; malnutrition; peptic ulcer; appendicitis; liver cirrhosis.
Respiration: transport of oxygen and carbon dioxide in man, control, pneumonia and bronchitis.
Circulation: blood Composition; types of heart; origin and conduction of heart beat; blood pressure; coronary blood vessels; myocardial infarction; ECG, angiogram, angioplasty and bye-pass surgery.
- UNIT- II** Excretion: types of nitrogenous waste; structure of mammalian kidney and urine formation; renal failure, kidney stone and kidney transplantation.
Osmo-ionic regulation in fresh water, marine and terrestrial organisms. (one example for each).
Muscle physiology: types of muscle, ultra structure of skeletal muscle, chemistry and energetics of muscle contraction, physical principles of muscle contraction.
- UNIT-III** Coordinating system: Nerve physiology, types of neuron, impulse transmission, synapse, synaptic transmission, reflex action.
Phono and photo receptors in man.
Endocrine physiology-endocrine glands in man-secretions and disorders.

BIOCHEMISTRY

- UNIT-IV** Structure and classification of carbohydrates proteins and fats; calorific values; balanced diet – source, functions, and deficiency diseases of vitamins.
- UNIT-V** Metabolism of carbohydrates, proteins and fats; energy kinetics; and hormonal control.
Enzymes – characteristics, mode of action – theories, factors affecting enzyme action.

Text Books:

1. Animal Physiology by Mariakuttikan, 2005, Saras Publications, Nagercoil.
2. Biochemistry by Arumugam, 2007, Saras Publications, Nagercoil.

Reference Books:

1. Leninger, L. 1990, Biochemistry, W.H. Freeman & co.
2. Hoar, W.S., 1983, General and comparative physiology, Prentice Hall of India.
3. Harper, H.A., 193, Review of Physiological chemistry, Muruen Ascian Ed.
4. Nagabushanam, R., 1991, Animal Physiology, S. Chand & Co.

Sl. No.: 1576

Subject Code: U11Z05C8

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY – V SEMESTER -CORE COURSE - VIII
(For the candidates admitted from 2011-12 onwards)

BIO TECHNOLOGY

- UNIT- I Scope and importance of biotechnology:** Genetic Engineering: Gene cloning -Tools of genetic Engineering – Enzymes and vectors; Gene cloning strategies- isolation of desired DNA, insertion of DNA into vector, introducing rDNA into host, identification, selection and expression of cloned DNA. Gene manipulation in Eukaryotes – *Agrobacterium* as natural genetic engineer; Transgenic animals-methods and applications.
- UNIT- II Molecular Techniques in Biotechnology:** Southern, Northern and Western blotting; Gene bank and libraries; PCR-Principle and Applications; Immunotechnology – Monoclonal Antibodies production and uses; Applications of biotechnology in medicine – production of vaccines and hormones, gene therapy, grafting, fertility control, foetus sexing, forensic medicine –DNA Finger printing.
- UNIT-III Industrial Biotechnology:** Fermentation – fermenter construction, process of fermentation – upstream and downstream; types of fermenters – solid state, submerged, and semi solid, uses of fermentation; Ethanol production, Applications of biotechnology in industries.
- UNIT-IV Agricultural & Environmental Biotechnology:** Bio-fertilizers-types and uses, Single Cell Protein, Nitrogen fixation-mechanism, Bio-pesticides. Biodiversity and its conservation, Applications of biotechnology in agriculture and environment.
- UNIT-V Enzyme Biotechnology:** Sources, production and applications of enzymes; Extraction of enzymes, Preparation of crude enzymes – centrifugation and precipitation; Purification of enzymes – dialysis, chromatography, electrophoresis. Immobilization of enzymes- methods, types and uses.

Text Books:

1. Kumaresan, 2009, Biotechnology, Saras Publications, Nagercoil.

Reference Books:

1. Balasubramania, D., 1996 Concepts in Biotechnology, University Press (India) Ltd., Hyderabad.
2. Dharmarajan, M., 1989, Genetic Engineering, S. Viswanathan & Co.
3. Dubey, R.C. 1995, Text book of Biotechnology, S. Chand & Co.
4. Trehan, K. 1996, Biotechnology, Wiley Eastern Ltd., New Delhi.
5. Travan, M.D.1993, Biotechnology, :the Biological Principles, TataMcGraw Hill Publishing Co., New Delhi.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY – V SEMESTER CORE COURSE - IX
 (For the candidates admitted from 2011-12 onwards)

BIOPHYSICS, BIOSTATISTICS AND BIOINFORMATICS

BIOPHYSICS

UNIT- I Scope of biophysics: Colloids – types, properties – Electro-kinetic properties, Donnan membrane equilibrium, Tyndall effect, Surface tension, Brownian movement, Filtration, Osmosis, Dialysis, Adsorption. Components of light: Beer-Lambert's law– colorimetry and spectrophotometry.

UNIT- II Laws of thermodynamics, Entropy and Enthalpy; Radioactivity – Types, measurement of radioactivity – Geiger – Muller counter. Isotopes and their uses, Effects of UV light and ionizing radiations; X-ray diffraction.

BIOSTATISTICS

UNIT-III Data collection – primary and secondary data; Processing the data – classification and tabulation; Organization of data – individual, discrete and frequency series; Diagrammatic presentation of data – Bar diagram, Pie diagram, Frequency polygon, Frequency curve – Histogram. Measures of central tendency – mean, median and mode; Measures of dispersion – range, standard deviation, variance and standard error.

BIOINFORMATICS

UNIT -IV Basics of computer: Definition of Computer, computer generations –components of computer – input and output devices, CPU, memory and types. Basic ideas about internet, browsing, website, E-mail, other uses of internet. Search Engines: Google, AltaVista, Yahoo and Lycos.

UNIT-V Bioinformatics : Introduction-Biological databases-Nucleotide sequence databases –GenBank, EMBL, DDBJ; Protein sequence databases- SWISPROT, TrEMBL, PIR; Protein Structure database-PDB. Bioinformatic Tools-Homology and Similarity searching tool: BLAST, FASTA.

Text Books:

1. Palanivel et al., 2002, Biophysics, Biostatistics and Computer Applications, Chimeera Publications, Trichy.
2. Sundaralingam & Kumaresan, 2006, Bioinformatics, SARAS Publications, Nagarcoil.

Reference Books:

1. Daniel, M., 1992, Basic Biophysics and biologists, Wiley International, New Delhi.
2. Zar, J.H., 1974, Biostatistical analysis, Prentice Hall Inc., New Jersey, USA.
3. Rajaraman, V., 1985, Fundamentals of computers, Prentice Hall of India.
4. Ignachimuthu, 2006, Basic Bioinformatics, Narosa, Publishing House.
5. Jean Michel Claverie & Cedric Notredame, 2005, Bioinformatics: A Beginner's Guide, Wiley Publishing Inc.

Sl. No.: 1578

Subject Code: U11Z05E1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY– V SEMESTER- ELECTIVECOURSE- I
(For the candidates admitted from 2011-12 onwards)

AQUACULTURE

- UNIT- I** Aquaculture – History and present status in India, Cultivable species of fishes
Culture of Live feed organisms – Rotifers and Artemia.
- UNIT- II** Composite fish culture – Carps in inland waters, Site selection, Pond
construction, pond preparation.
- UNIT-III** Water Quality Management, Control of predatory organisms, Seed transport
and Stocking, Pathology – Parasitic infection, Diseases of fishes and prawns
and their control measures.
- UNIT-IV** Hypophysation or Induced breeding in carps, Hybrid fish, Transgenic fish,
Techniques for hatching and spawning. Transport of fry and fingerlings.
- UNIT-V** Methods of Harvesting, Freezing techniques, Canning, Smoking, Fish products
– fish meal, fish oil and fish pickle. Marketing – Export and Import countries,
Quality control.

Text Book:

1. Arumugam, 2008, Aquaculture, Saras Publications, Nagercoil.

References:

1. Barton Lias, Estuarine Chemistry
2. Kennedy, Estuarine perspective.
3. Quereshi, T.A. and Quereshi, N.A., Indian Fishes.
4. Pillay, T.V.R., Aquaculture – Principles and Practices, Fishing News Books.
5. CMFRI, Coastal aquaculture – Marine Prawn culture.

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Sl. No.: 1579

Subject Code: U11Z05S2

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY – V SEMESTER - SKILL BASED ELECTIVE - II
(For the candidates admitted from 2011-12 onwards)

APICULTURE

UNIT- I Apiculture – Systematic position – Species of Honey Bees – Embryology and life history of honey bees.

UNIT- II Bee colony, Castes – Natural colonies and their yield. Artificial bee hives – Newton’s Bee hive – Structure, Construction of space frames – Selection of Sites.

UNIT-III Apiary – Care and Management. Catching and transforming a colony – Handling and maintenance of the colony – Instruments employed in Apiary.

UNIT-IV Natural enemies and Diseases (Bacterial and fungal Diseases) of Honey bees and their Control Methods.

UNIT-V Honey – Extraction and Equipments uses – Chemical composition – Economic importance – Nutritive and medicinal values of honey.

Text Books:

1. Thiyagarajan, S. 2000 – Apiculture, Tee Jay Publication, Thanjavore.
2. Jhonson and Jeyachandra, 2007, Apiculture

Reference Books:

1. Cherian, R and K.Ramanathan, 1992 Bee Keeping in India
2. Misra, R.C. 1985, Honey Bees and Their Management in India ICAR
3. Rare, S. 1998; Introduction to Bee Keeping. Vikas Publishing House.

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Subject Code: U11Z05S3

GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-5
B.Sc. ZOOLOGY – V SEMESTER -SKILL BASED ELECTIVE - III
(For the candidates admitted from 2011-12 onwards)

VERMICULTURE

- UNIT- I** Introduction, Earthworms – Ecological types – Trophic classification of earthworms; Detritivores and geophages, Epigeics, anecics and endogeics. Physical and chemical effects of earth worms on soils.
- UNIT- II** Earthworms: Structure – External features – Shape and Size, Segments, Clitellum, colour, setae, External apertures, body wall, locomotion. Internal features – Body cavity, feeding and digestion, Circulation, Respiration, Excretion, Reproduction, Regeneration and Bioluminescence. Lifecycle of Earthworm- *Lampito mauritii*
- UNIT-III** Earthworms for culture – worms used in vermiculture – Earthworm breeding – Vermicompost.
- UNIT-IV** Vermiculture and vermitechnology – Preparations for starting vermiculture – Preparation of Vermibeds. Setting up of Vermiwash unit. Economics of Vermitechnology.
- UNIT-V** Applications of vermiculture – Effect of earthworms on plant growth – applications in organic agriculture – Earthworms in medicine, as feed and other uses.

Text Book:

- a. Thiagarajan, S., 2002, Commercial Zoology Tee Jay Publications.
- b. Ramalingam, R., 2007, Earthworm Tamilnadu State Higher Education Council. Chennai.

Reference Book:

1. Sultan A. Ismail, 1977, Vermicology, The biology of earthworms, Orient Longman Ltd., Hyderabad.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY – VI SEMESTER - CORE COURSE – X
 (For the candidates admitted from 2011-12 onwards)

PRACTICAL – III (FOR CC VII TO IX)
(Physiology & Biochemistry, Biotechnology and Biophysics, Biostatistics & Bioinformatics)

Physiology and Biochemistry

1. Analyse activity of human saliva in relation to temperature and calculation of Q10
2. Enumeration of RBC and WBC
3. Differential count of WBC
4. Qualitative tests for Protein, Carbohydrate and Lipid
5. Qualitative tests for nitrogenous wastes
6. Kymograph, B) Haemoglobinometer C) Sphygmomanometer D) ATP model, E) Haemoglobin model

Biotechnology

1. Isolation of DNA – Demonstration only
2. Transgenic animals: Sheep, Cow & Mouse
3. Vector: PBR322, SV40 & Ti Plasmid.

Biophysics, Biostatistics and Bioinformatics

1. A) pH meter B) Colorimeter C) Spectrophotometer D) Electrophoretic apparatus
2. Construction of Bar diagram, Histogram, and Pie diagram
3. Calculation of Mean, Median, Mode, Standard deviation, Standard error using molluscan shells.
4. Mouse, Keyboard, CPU, Monitor and Printer
5. Wire frame model and Ball and stick model of Myosin and Cytochrome

A record of laboratory work shall be submitted at the time of practical examination.

Mark distribution:

1. Major practical (Physiology and Biochemistry)	: 25 Marks
2. Minor Practical (Biostatistics)	: 15 Marks
3. Spotters (5x5) Physiology and biochemistry – 2 Biophysics – 1, Biostatistics – 1, Bioinformatics – 1	: 25 Marks
4. Record	: 10 Marks
Total	: 75 Marks

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY – VI SEMETER - CORE COURSE – XI
 (For the candidates admitted from 2011-12 onwards)

PRACTICAL – IV (FOR CC XII AND XIII)

(Ecology and Evolution, Developmental biology & Immunology)

Ecology

1. Estimation of Salinity
2. Estimation of dissolved oxygen.
3. Estimation of Carbonate and bicarbonates.
4. Determination of pH using pH paper and pH meter.
5. Mounting of Zoo Plankton
6. Animal Association: Mutualism, Commensalism & Parasitism.
7. Study of Intertidal (Sandy, Muddy & Rocky) fauna.
8. Visit to the different habitats for studying the adaptations of animals.
9. (a) Secchi disc (b) Wet and Dry hygrometer (c) Rain gauge, (d) Six's Maximum Minimum thermometer (e) Plankton net (f) pH meter, (g) Fortin's barometer.

Evolution

10. Animals of Evolutionary Significance: *Peripatus*, *Archaeopteryx*.
11. Colouration - *Chameleon*, *Lycodon* & *Bungarus*.
12. Mimicry - *Phyllium*, *Carausius*
13. Fossils - Ammonoid, Nautiloid and Echinoid

Developmental biology & Immunology

1. Chick Blastoderm mounting – Demonstration in only.
2. Examination of prepared microslides: (a) To study Blastula, gastrula & yolk plug stages in frog (b) 24 hours, 36 hours, 48 hours, 72 hours & 96 hours developmental stages in chick
3. ABO and Rh blood grouping in human being.
4. Lymphoid organs of mouse – demonstration only

A record of laboratory work and field visit report shall be submitted at the time of practical Examination.

Mark distribution:

1. Major practical (Ecology)	:	25 Marks
2. Minor Practical (Developmental biology & Immunology)	:	10 Marks
3. Spotters (5x5) (Ecology– 2, Developmental biology – 1, Immunology – 1, Evolution – 2)	:	25 Marks
4. Field visit report & Record (5 + 10 = 15)	:	15 Marks
Total	:	75 Marks

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS) KARUR-5
B.Sc. ZOOLOGY – VI SEMESTER -CORE COURSE - XII
(For the candidates admitted from 2011-12 onwards)

ECOLOGY AND EVOLUTION

ECOLOGY

- UNIT-I** Ecology and Environmental science – definition, scope, branches; abiotic factors and adaptations in animals – water, soil, temperature and light. Biotic factors – animal relationship
- UNIT-II** Ecosystem – definition, structure, pond ecosystem, primary production, secondary production, food-chain, food-web, trophic levels, energy flow, pyramid of biomass, pyramid of energy. Community ecology-types and characteristics, Population Ecology
- UNIT-III** Wild life resources and protected areas, endangered and endemic animals of India; Wild life conservation and management Pollution – types, sources, effects of air, water, land noise, thermal, pesticide and radioactive pollution, Green house effect, Ozone depletion and its importance, Global warming, Acid rain, Bioaccumulation, Biomagnifications.

EVOLUTION

- UNIT-IV** Origin of Life, Lamarckism, Darwinism, DeVries theory of Mutation and Modern Synthetic theory of Evolution.
- UNIT-V** Evidences for evolution – Embryological and Biochemical evidences Mimicry and animal colouration, Species concept, Isolating mechanism and Evolution of Man.

Text Books:

- a. Arumugam, 2002, Ecology, Saras Publications, Nagercoil.
- b. Arumugam, 2002, Evolution, Saras Publications, Nagercoil.

Reference Books:

1. Odum, E.P., 1971, Fundamentals of Ecology, W.B. Saunders Company, Philadelphia.
2. Clarke, G.L., 1954, Elements of Ecology, John Wiley & Sons, New York.
3. Rastogi, V.B. and M.S. Jayaraj, 1989, Animal Ecology and Distribution of animals, Kedarnath Ramnath.
4. Verma and Agarwal, Organic evolution. S.Chand & Co.

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B.Sc., ZOOLOGY – VI SEMESTER - CORE COURSE - XIII
 (For the candidates admitted from 2010-11 onwards)

DEVELOPMENTAL BIOLOGY AND IMMUNOLOGY

DEVELOPMENTAL BIOLOGY

- UNIT-I** Gametes and gametogenesis: Structure and types of sperm and egg; Spermatogenesis and spermogenesis; Oogenesis; growth of Oocyte, Vitellogenesis, organization of egg cytoplasm, polarity and symmetry, maturation of egg and egg envelopes. Fertilization – External and internal, sperm – egg interaction, physiological changes in the organization of egg cytoplasm, theories of fertilization.
- UNIT- II** Cleavage – Patterns and types of cleavage, Factors affecting cleavage; Blastulation – types of blastula – Presumptive organ forming areas in frog and chick-fate maps; Gastrulation in frog and chick, Morphogenetic movements – epiboly and emboly.
- UNIT-III** Organogenesis – Development of eye; Organiser concept; Embryonic induction; Foetal membranes in chick, Placentation in mammals; Concept of test tube baby; Nuclear transplantation.

IMMUNOLOGY

- UNIT-IV** History and scope of immunology, Immunity and its types; Lymphoid organs- primary and secondary (thymus, bone marrow, Bursa fabricius, spleen, tonsil, lymph node and Peyer's patches.
- UNIT-V** Immunoglobulins – structure and functions; Antigen – antibody reaction, Immunology of infectious diseases, AIDS; Humoral and Cell mediated immune response.

Text Books:

1. Arumugam, 2002, Embryology, Saras Publications, Nagercoil.
1. Arumugam, 2002, Immunology, Saras Publications, Nagercoil.

Reference Books:

1. Balinsky, B.I., 1981, An introduction to embryology, W.B. Saunders Company, Philadelphia.
2. Verma, P.S. and V.K. Agarwal, 2005, Chordate Embryology, S.Chand & Co., New Delhi.
3. Nandhini, S. 1994, Immunology Introductory text book, New Age Int (P) Ltd. Publications, New Delhi.
4. Chakravarthy, A.K. 1996, Immunology, Tata McGraw Hill Publishing Co. Ltd., New Delhi.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc. ZOOLOGY – VI SEMESTER - ELECTIVE COURSE - II
(For the candidates admitted from 2010-11 onwards)

ENTOMOLOGY

- UNIT- I** Taxonomy – Basics of insect classification, Classification up to super family level, Key characteristics with South Indian examples, External Anatomy of a typical insect – Exoskeleton, Head, Throax and Abdomen, Metamorphosis of insects, Mouth parts in insects, Types of larvae and pupae.
- UNIT- II** Physiology of insects – Digestive system, Excretory system, Respiratory system, Circulatory system, Nervous system and sense organs, Reproductive system, Endocrine system and pheromones.
- UNIT-III** Classification based on Economic Importance of Insects. Insects relation to Public Health – Mosquito and Housefly; Household insect pests – Ant, Termite and Cockroach – Beneficial Insects – Economic Importance of Honeybee, Silkworm and Lac insect; Insect pollinators, Parasites, Predators and Scavengers.
- UNIT-IV** Pest – Definition, Insect pests of Paddy, Sugarcane, Cotton, Groundnut and Brinjal- damages caused and control measures; Common pests of stored products and control measures.
- UNIT-V** Methods and Principles of pest Control – Natural, Mechanical, Physical, Chemical and Biological control methods, Integrated Pest Management, Causes for assuming pest status. Pest surveillance & forecasting pest outbreak, Estimation of damage caused by insect pest to crops.

Text Books:

1. Vasantharaj David, B., 2005, Elements of Economic Entomology, Popular Book Depot, Chennai.
2. Nayar, K.K., T.N. Anathakrishnan and B. Vasantharaj David, General and Applied Entomology

Reference Books:

1. Ambrose Dunston, P. Insects: Structure, Function and Biodiversity
2. Chapman, R.F., The Insects: Structure and Function
3. Wigglesworth, V.B., Principles of Insect Physiology.
4. Krishnan, N.T., 1993, Economic Entomology, J.J. Publications, Madurai.
5. Ramkrishnan Ayyar, T.V., 1984, Hand Book of Economic Entomology for South India, International Books and Periodicals Supply Service, New Delhi.

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Subject Code: U11Z06E3

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-5
B.Sc., ZOOLOGY –VI SEMESTER – ELECTIVE COURSE - III
(For the candidates admitted from 2010-11 onwards)

POULTRY SCIENCE

- UNIT- I** Introduction to poultry science – Historical review. Nomenclature of breeds of fowl, classification of fowls, selection of breed – natural and artificial brooding. Housing and equipment – General principles of building poultry sheds, deep litter system, laying cages.
- UNIT- II** Brooding and rearing – Methods of brooding, brooder temperature, space and duration; feed, water and space allowance, debeaking – vaccination. Management of growers, layers, broilers – lighting of chicks, growers, and layers; Summer and winter management.
- UNIT-III** Feed additives – names, allowance and usage of food additives – Food stuffs for poultry in relation to protein, aminoacids, minerals (Ca and P), vitamins and fiber content. Feed formulations for chicks, growers, phase I to phase III layers and broilers.
- UNIT-IV** Short account on cause symptoms, prevention, control and treatment of viral, bacterial, fungal and parasitical diseases.
- UNIT-V** Nutritive value of egg, factors affecting egg size, storage and preservation of egg, marketing, incubation and hatching of eggs.

Text Book:

1. Banerjee, G.C., 1992, A textbook of animal husbandry, Oxford and IBM Publishing Co., New Delhi.

Reference Books:

1. Sunil Kumar Das, 1994, Poultry production, CBC Publishers and Distribution, Delhi.
2. Shukula, G.S. and Upadhyay, V.B., 1997, Economic Zoology, Rakesh Rastogi Publication, Meerut.
3. Indian Poultry Industry year book 1975-76. By Sakuntbak B. Gupta, C-35, New Bactak Road, New Delhi.