

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE (AUTONOMOUS)-POLLACHI

198	B.Sc. Physics	Core I : Properties of Matter	20UPS101	2020
199	B.Sc. Chemistry	Core Paper – V : Coordination and Bioinorganic Chemistry	20UCY507	2020
200	B.Sc. Botany	Major Paper XIV - Horticulture & Plant Breeding	20UBY614	2020
201	B.Sc. Botany	Skill based subjects (Major electives)-Forest Botany	20UBY6S3	2020
202	B.Sc. Botany	Major Paper XIII – Biotechnology and Genetic engineering	20UBY510	2020
203	B. Sc. Zoology	Core Major Paper I : Non Chordata	20UZY101	2020
204	B. Sc. Zoology	Core Major Paper II : Chordata	20UZY202	2020
205	B. Sc. Zoology	Ancillary Zoology Paper-II Economic Zoology	20UBY2A2	2020
206	B. Sc. Zoology	Core Major Paper- V: Genetics	20UZY405	2020
207	B. Sc. Zoology	Core Major Paper-X Biochemistry and Bioinformatics	20UZY510	2020
208	B. Sc. Zoology	Major Practical -III (Non Semester Pattern) Developmental Biology , Animal Physiology&Endocrinology, Biostatistics and Biophysics, Bioinformatics & Biochemistry and MLT	20UZY614	2020
209	B. Sc. Zoology	Skill Based Elective (SBE) Vermiculture	20UZY6S3	2020
210	B. Sc. Zoology	Core Elective Paper-VI Wild life Conservation	20UZY6E6	2020
211	M.Com	Internet,HTML and Cyber Security	20PCO103	2020
212	M.Com	Labour Legislation	20PCO309	2020
213	Tamil Aided	Tamil Paper I	20UTL101	2020
214	Tamil Aided	Tamil Paper II	20UTL202	2020
215	Tamil Aided	Tamil Paper III	20UTL303	2020
216	Tamil Aided	Tamil Paper IV	20UTL404	2020
217	B.A Tamil	Ikkala illakiyam	20UTM101	2020
218	B.A Tamil	Sitru illakiyam	20UTM204	2020
219	B.A Tamil	Kappiyangal	20UTM509	2020
220	B.A Tamil	Sanga illakiyam Ettutogai	20UTM613	2020
221	B.A Tamil	Sanga illakiyam pattupattu	20UTM614	2020

BoS Minutes
Highlighted



Sl. No	Name of the Members	Signature
1.	Dr. S. Somasundaram (Chairman) Head & Dept. of zoology	Dr. S. SOMASUNDARAM Assistant Professor and Head Department of Zoology Mullamathu College, Mullamathu Coimbatore - 642 001
2.	Dr. Manimegalai (University Nominee) Professor Dept of zoology Avinasi lingam University Coimbatore - 641043	Dr. K. Manimegalai M.Sc., M.Phil., Ph.D. Professor in Zoology Avinashilingam Institute for Women Science and Higher Education for Women Coimbatore - 641 043
3.	Dr. P. Thiruchenthil Nathan Professor Dept. of zoology Periyar University (Subject Expert) Salem - 636011	Dr. P. THIRUCHENTHIL NATHAN Professor Department of Zoology Periyar University, Salem - 636 011. Cell: 0944 96 99908
4.	Dr. V. Gokula (Academic Auditor) Head Dept. of zoology National College Trichy - 620001	Dr. V. GOKULA Head & Associate Professor PG & Research Department of Zoology National College (Autonomous) Trichinopoly - 620 001 Tamilnadu, India
5.	Mr. R.M. Karthik (Industrialist) Proprietor Kalpatharu Coir Products Ravunapuram Udumalpet - 642207	Mr. R.M. Karthik 22/02/2020
6.	Ms. P. Kalavani, Assistant Professor, Dept. of zoology, Vellalar college for women,	Ms. P. Kalavani 22/2/2020

22.02.2020 (Saturday)

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Sl. No.	Name of the Members	Signature
	Members of the Board	
7.	Dr. M. Durairasu	M. Durairasu 22/2/2020
8.	^{Dr.} MS. S. Mariselvi	MS. S. Mariselvi
9.	MS. S. Jayalakshmi	MS. S. Jayalakshmi
10.	Dr. S. Christobher	S. Christobher 22/2/2020

Studies in (2020 - 2023)
1084
Saturday (22.02.2020)

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Nallamuthu Gounder Mahalingam College



(Autonomous)
Re-Accredited by NAAC and ISO 9001:2015 Certified Institution
Affiliated to Bharathiar University, Coimbatore
Pollachi - 642 001

INTERNAL QUALITY ASSURANCE CELL (IQAC)

Department of Zoology

Minutes of the Board of Studies Meeting held on 22-02-2020

The BoS Meeting started with prayer. The Head of the Department introduced the panel members and welcomed them. The panel members are,

1. **University Nominee**
Dr. K. Manimegalai,
Professor,
Department of Zoology,
Avinashilingam University,
Coimbatore- 641 043
2. **Subject Expert**
Dr. P.Thiruchenthil Nathan ,
Professor,
Department of Zoology,
Periyar University,
Salem - 636001
3. **Academic Auditor**
Dr. V. Gokula,
Head, Department of Zoology,
National College,
Trichy - 620001
4. **Industrialist**
Mr. R. M. Karthik,
Proprietor,
Kalpatgharu Coir Products,
Ravanapuram, Udumalpet
5. **Alumini**
Ms. P. Kalaivani,
Assistant Professor,
Department of Zoology,
Vellalar College for Women
Erode

The panel members gave the following suggestions and recommendations

UG/PG (2020-2023 BATCH)

S.No	Paper Code Paper Title	Changes	
		Removed (if any)	Added (if any)
Semester-I			
1.	20UZY101 Core Paper –I Nonchordata	Unit I Type study- <i>Plasmodium</i> Economic importance of Protozoa Unit II Coral reefs-Types and Formation Unit III Phylum Aschelminthes Economic importance of Aschelminthes Phylum Annelida Type study –Earthworm	Unit I Type study- <i>Paramecium</i> Protozoa in Human Diseases Unit II Polymorphism in coelenterates Unit- III Phylum Annelida Type study Neries Metamerism in Annelids
2.	20UBY1A1 Ancillary Zoology Paper I Nonchordata and Chordata	Unit III <i>Lamellidens</i> - Circulatory system Unit IV Migration of fishes Unit V <i>Calotes</i> -Brain Frog- Reproductive system Mammalia – Rabbit excretory system	Unit V Digestive system of pigeon
Semester-II			
3.	20UZY202 Core Paper –II Chordata	Unit I Pisces Urinogenital system Unit II Class Amphibia-Frog Cranial nerves Unit III Urinogenital system Unit IV Aves- Flightless birds	Unit I Pisces -Placoid scales Excretory system Reproductive system Unit II Class Amphibia-Frog Heart Parental care in frogs Unit III Excretory system, Reproductive system Unit IV Aves- Flight Adaptation
4.	20UZY203 Major Practical - I (Non-Semester Pattern) Nonchordata & Chordata	Spotters A. Earthworm B. Human Brain C. Sponge gemmules D. Emu	Spotters <i>A.Leucosolenia</i> , <i>Neries</i> Pila, B.L.S. of <i>Leucosolenia</i> Placoid scale, Rabbit Brain C. <i>Archaeopteryx</i> Salamader, Bat D. Sea horse, <i>Platypus</i> , <i>Sepia</i>
5.	20UBY2A2 Ancillary Zoology Paper-II Economic Zoology	Unit – V Arthropod vectors and Human disease (Full unit removed)	Unit -III Scope of sericulture, Vegetative propagation Unit -IV Scope of poultry Unit – V Vermiculture (Full unit introduced)

5.	20UBY2A3 Ancillary Zoology Practical (Non-Semester Pattern) Paper I & II	Spotters <i>Taenia solium</i> Pigeon-Quill feather Snake – Poison apparatus Foot and mouth disease – virus Bird flu	Obelia colony Leucosolenia Flight muscles Bat Peripatus Silkgland Octopus
Semester-III			
7.	20UZY304 Core Paper –IV Cell Biology	Unit I -1.HIV virus Unit II -2.Cytoplasmic matrix Unit III -3.mDNA, 4.Protein synthesis components	Unit IV 1.Centrosome – Structure and function. 2.Types of chromosome
8.	20UZY3N1 Non- Major Elective (NME) Public Health and Hygiene	Unit IV Malaria, Filariasis Unit V Global health council	Unit I Dynamics of Disease Transmission-Malaria Unit IV Influenza , Chicken pox
Semester-IV			
9.	20UZY405 Core Paper –V Genetics	Unit II 1. Interference and coincidence 2. XX-XO type- Grasshopper 3. Bridge's genic balance theory Unit III 4. Eye colour in drosophila Unit V 5. Bacteriophage infection 6. Biochemical evidences in DNA genetic material 7. Molecular basis of gene mutation Population genetics	Unit IV 2. Euphenics Unit V 3. Genetic counseling
10.	20UZY406 Major Practical – II (Non-Semester Pattern) Cell biology & Genetics	Spotters : Cell Biology 1. Cell cycle 2. Cancer cell Genetics 3. Pedigree analysis	Spotters : Cell Biology 1. Polytene chromosome
11.	20UZY4N4 Non-Major Elective (NME) Apiculture	Unit -II <i>Apis mellifera</i>	Unit- II Relationship between plants and bee- Plant as habitat- symbiosis-pollination
Semester-V			
12.	20UZY 507 Core Paper – VII Developmental Biology	Unit- I Definition-Ontogeny- Phylogeny Unit-III Comparison of the cleavage and gastrulation of frog and chick – Unit-IV Nuclear transplantation types- techniques	Unit-I Introduction to developmental biology
13.	20UZY508 Core Paper – VIII Biotechnology	Unit I : Gene map lambda DNA Unit III Monoclonal antibody Retroviral and embryonic methods Unit V : Biochips	Unit III. Biolistics (SS) Unit IV: Scope and application of Nano-biotechnology

		Possible dangers of GEO Implementation of biosafety guidelines	
14.	20UZY509 Core Paper – IX Biostatistics & Biophysics	Unit II 1. Merits and demerits Unit III 2. Null hypothesis, 3. Probability Unit IV 4. Mechanism of Bioluminescence Unit V 5. Spectrophotometer	Unit II 1. Mean deviation - Measures of dispersion Unit III 2. Student t test
15.	20UZY510 Core Paper – X Biochemistry and Bioinformatics	Unit -I 1. Hexoses 2. Nonreducing sugar and reducing sugar 3. Heparin 4. Starch 5. Wax 6. Glycolipids 7. Fatty acid and cholesterol	-
16.	20UZY 5E1 Core Elective Paper – I Medical Laboratory Techniques	Unit-I Automatic analyzer Unit-V Venereal Disease	Unit-I Urinometer, Albumino meter Unit-V Gonorrhoea Disease
Semester-VI			
17.	20UZY611 Core Paper – XI Animal Physiology and Endocrinology	Unit-III Sexual cycle in human: Puberty, Spermiation, Ovulation, Menstrual cycle Pregnancy and Parturition.	-
18.	20UZY613 Core Paper – XIII Microbiology and Immunology	Unit II Bacteriophages _Life cycle Lytic and Lysogenic Life cycle	Unit II Structure of Bacteriophages Unit III Biochemical changes of Food Spoilage Unit –V Types of tumor -, Causes of tumor –factors involved in tumor immunity
19.	20UZY6E3 Core Elective Paper-III Sericulture	Unit I. 1. Central and state silk board functions	Unit III 1. Bed cleaning and its methods Unit IV 2. Chawki rearing in India Unit V-3. Indian Uzi fly
20.	20UZY614 Major Practical – III (Non-Semester Pattern) Developmental Biology, Animal Physiology & Endocrinology, Biostatistics	Preparation of haemin crystals Frog yolk plug Chick egg Mammalian heart Sahli's haemometer BP apparatus PH meter Ultracentrifuge Structure of sucrose	Estimation of haemoglobin by using haemoglobinometer Estimation of Erythrocyte Sedimentation rate in human Estimation of glucose using digital method Frog- Blastula Placenta of sheep Human foetus

Comprehensive Syllabus Revision

Department: Zoology

Implementation: 2020

Change: Change of entire course (5 units) : 100%, change of one full unit : 20% , small or Old change : 10%
change : 5%

Sem	Course Code	Name of the course	old/new	% of modifications	Skill development	Entrepreneurship	Employability
I	20UZY101	Core Paper –I Nonchordata	old	35%	✓		
II	20UZY202	Core Paper –II Chordata	old	20%	✓		
II	20UZY203	Major Practical - I (Non-Semester Pattern) Nonchordata & Chordata	old	15%	✓		
I	20UBY1A1	Ancillary Zoology Paper I Nonchordata and Chordata	old	10%	✓		
II	20UBY2A2	Ancillary Zoology Paper-II Economic Zoology	old	20%	✓		
II	20UBY2A3	Ancillary Zoology Practical (Non-Semester Pattern) Paper I & II	old	5%	✓		
III	20UZY304	Core Paper –IV Cell Biology	old	10%	✓		
III	20UZY3N1	Non- Major Elective (NME) Public Health and Hygiene	old	10%	✓		
III	20UZY3N2	Non- Major Elective (NME) Ornamental Fish Culture	old	0%		✓	✓
IV	20UZY405	Core Paper –V Genetics	old	20%	✓		
IV	20UZY406	Major Practical – II (Non-Semester Pattern) Cell biology & Genetics	old	5%	✓		
IV	20UZY4N3	Non-Major Elective (NME) Food and Nutrition	old	0	✓		
IV	20UZY4N4	Non-Major Elective (NME) Apiculture	old	5%		✓	✓
V	20UZY 507	Core Paper – VII Developmental Biology	old	10%	✓		
V	20UZY508	Core Paper – VIII Biotechnology	old	10%			✓
	20UZY509	Core Paper – IX Biostatistics & Biophysics	old	5%	✓		✓
V	20UZY510	Core Paper – X Biochemistry and Bioinformatics	old	20%	✓		✓
V	20UZY 5E1	Core Elective Paper – I Medical Laboratory Techniques	old	15%	✓		✓
V	20UZY 5E2	Core Elective Paper – II Poultry Science and Management Technology	old	0%	✓	✓	✓

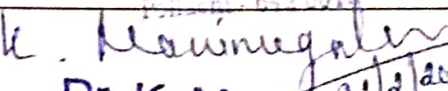
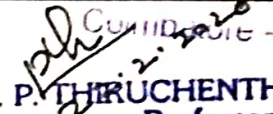
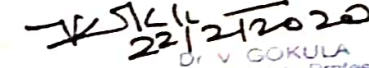
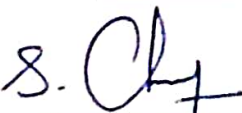
	&Biophysics, Bioinformatics &Biochemistry	Structure of starch	BLAST
21.	20UZY 615 Major Practical - IV (Ecology, Evolution, Biotechnology, Microbiology, Sericulture and Aquaculture)	SPOTTERS Sacculina on Crab Coccyx Peppered moth	SPOTTERS Sucker fish Giraffe, Lung fish Silk gland Pebrine Lernaeasis Live feed-Daphnia
22.	20UZY6S3 Skill Based Elective (SBE) Vermiculture	Unit III Diseases and Predators of Earthworm control measures Unit IV Biomass Nutrient content of Soil and Biomass Unit V Nutrient value of vermicompost	Unit I Economic importance of Earthworm Unit III Collection of earth worm Methods of vermicompo Unit IV Indoor vermicomposting Precautions need for vermicomposting Nutrient content of vermicompost
23.	20UZY 6S4 Skill Based Elective (SBE) Biopharmaceuticals	Unit V Quality assurance and quality control Fundamental of quality assurance, benefits, structure of quality management, documentation, quality assurance in manufacturing	-

New papers (Courses) introduced

S.No	Year	Sem	Paper Code	Paper Title	Changes		% of modification
					Removed (if any)	Added (if any)	
1	2020-2023	VI	20UZY6E6	Core Elective Paper –VI Wildlife Conservation	Dairy farming and management Technology	Wildlife Conservation	100 %

After a thorough discussion based on the suggestions/feedback received from the stakeholders, the department suggested the following new courses and classified the courses as skills development / Employability / Entrepreneurship.

20.	VI	20UZY611	Core Paper –XI Animal Physiology and Endocrinology	old	10%	✓		
21.	VI	20UZY612	Core Paper – XII Ecology & Evolution	old	0	✓		
22.	VI	20UZY613	Core Paper – XIII Microbiology and Immunology	old	10%	✓		✓
23.	VI	20UZY6E3	Core Elective Paper-III Sericulture	old	10%	✓	✓	✓
24.	VI	20UZY6E4	Core Elective Paper-IV Insect Pest Management	old	0%	✓	✓	✓
25.	VI	20UZY6E5	Core Elective Paper-III Aquaculture	old	0	✓	✓	✓
	VI	20UZY6E6	Core Elective Paper –VI Wildlife Conservation	new	100	✓		
26.	VI	20UZY614	Major Practical – III (Non-Semester Pattern) Developmental Biology, Animal Physiology & Endocrinology, Biostatistics & Biophysics, Bioinformatics & Biochemistry & MLT	old	25%	✓		
27.	VI	20UZY 615	Major Practical - IV (Ecology, Evolution, Biotechnology, Microbiology, Sericulture and Aquaculture)	old	10%	✓		
28.	VI	20UZY6S3	Skill Based Elective (SBE) Vermiculture	old	20%	✓	✓	✓
29.	VI	20UZY 6S4	Skill Based Elective (SBE) Biopharmaceuticals	old	0	✓		✓

	Name of the members	Signature
1.	Chairman Dr. S. Somasundaram, Assistant Professor & Head Department of Zoology, NGM College, Pollachi	 DR. S. SOMASUNDARAM M.Sc. Ph.D. Assistant Professor and Head Department of Zoology Nallamuthu Gounder Mahalingam College Pollachi - 642 004
2.	University Nominee Dr. K. Manimegalai, Professor, Department of Zoology, Avinashilingam University, Coimbatore- 641 043	 Dr. K. Manimegalai M.Sc., M.Phil., Ph.D. Professor in Zoology Avinashilingam Institute of Home Science and Hospital Management Coimbatore - 641 043
3.	Subject Expert Dr. P. Thiruchenthil Nathan , Professor, Department of Zoology, Periyar University, Salem-636001	 Dr. P. THIRUCHENTHIL NATHAN Professor Department of Zoology Periyar University, Salem - 636 011. Cell: 094436 99908
4.	Academic Auditor Dr. V. Gokula, Head, Department of Zoology, National College, Trichy-620001	 Dr. V. GOKULA Head & Associate Professor Research Department of Zoology National College (Autonomous) Trichirapalli - 620 001 Tamilnadu, India.
5.	Industrialist Mr. R. M. Karthik, Proprietor, Kalpatgharu Coir Products, Ravanapuram, Udumalpet	
6.	Alumini Ms. P. Kalaivani, Assistant Professor, Department of Zoology, Vellalar College for Women Erode	 22/2/2020
	Dr. M. Durairaju Associate Professor of Zoology NGM College, Pollachi	
	Dr.S.Mariselvi Assistant Professor of Zoology NGM College, Pollachi	
	Ms. S.Jayalakshmi Assistant Professor of Zoology NGM College, Pollachi	
	Dr. S. Christobher Assistant Professor of Zoology NGM College, Pollachi	



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INTERNAL QUALITY ASSURANCE CELL (IQAC)

Department of Zoology

Board of Studies 2020- 2021

Percentage of the Syllabus revision on 22-02-2020

UG (2020-2023 BATCH)

S. No	Year	Semester	Paper Code	Paper Title	Changes		% of modifications	Reason for change
					Removed (if any)	Added (if any)		
1.	2020-2023	I	20UZY101	Core Paper –I Nonchordata	Unit I Type study- <i>Plasmodium</i> Economic importance of Protozoa Unit II Coral reefs-Types and Formation Unit III Phylum Aschelminthes Economic importance of Aschelminthes Phylum Annelida Type study –Earthworm Unit IV Peripatus as a Connecting Link.	Unit I Type study- <i>Paramecium</i> Protozoa in Human Diseases Unit II Polymorphism in coelenterates Unit- III Phylum Annelida Type study Neries Metamerism in Annelids	35%	Suggested by subject expert
2.	2020-2023	II	20UZY202	Core Paper –II Chordata	Unit I Pisces Urinogenital system Unit II Class Amphibia-Frog Cranial nerves	Unit I Pisces Placoid scales Excretory system Reproductive system	20%	Suggested by faculty

					Origin of Amphibia Unit III Urinogenital system Unit IV Aves- Flightless birds	Unit II Class Amphibia-Frog Heart Parental care in frogs Unit III Excretory system Reproductive system Unit IV Aves- Flight Adaptation		
3.	2020-2023	II	20UZY203	Major Practical - I (Non-Semester Pattern) Nonchordata & Chordata	Spotters A. Earthworm B. Human Brain C. Sponge gemmules D. Emu	Spotters A. <i>Leucosolenia</i> <i>Neries</i> Pila B.L.S. of <i>Leucosolenia</i> Placoid scale Rabbit Brain C. Archaeopteryx Salamader Bat D. Sea horse, Platypus, Sepia	15%	Suggested by Subject expert
4.	2020-2023	I	20UBY1A1	Ancillary Zoology Paper I Nonchordata and Chordata	Unit III Lamellidens - Circulatory system Unit IV Migration of fishes Unit V Calotes-Brain Frog- Reproductive system Mammalia – Rabbit excretory system	Unit V Digestive system of pigeon	10%	Suggested by faculty
5.	2020-2023	II	20UBY2A2	Ancillary Zoology Paper-II Economic Zoology	Unit – V Arthropod vectors and Human disease	Unit -III Scope of sericulture Vegetative propagation Unit -IV Scope of poultry Unit – V Vermiculture	20%	Suggested by students
6.	2020-2023	II	20UBY2A3	Ancillary Zoology Practical (Non-Semester Pattern) Paper I & II	Spotters <i>Taenia solium</i> Pigeon-Quill feather Snake – Poison apparatus Foot and mouth disease – virus, Bird flu	Obelia colony <i>Leucosolenia</i> Flight muscles Bat Peripatus, Silk gland, Octopus	5%	Suggested by Faculty

7.	2020-2023	III	20UZY304	Core Paper –IV Cell Biology	Unit I 1.HIV virus Unit II 2.Cytoplasmic matrix Unit III 3.mDNA 4.Protein synthesis components	Unit IV 1.Centrosome – Structure and function. 2.Types of chromosome	10%	Suggested by subject expert
8.	2020-2023	III	20UZY3N1	Non- Major Elective (NME) Public Health and Hygiene	Unit IV Malaria, Filariasis Unit V Global health council	Unit I Dynamics of Disease Transmission-Malaria Unit IV Influenza , Chicken pox	10%	Suggested by subject expert
9	2020-2023	III	20UZY3N2	Non- Major Elective (NME) Ornamental Fish Culture	Nil	Nil	0%	-
10.	2020-2023	IV	20UZY405	Core Paper –V Genetics	Unit II 1. Interference and coincidence 2. XX-XO type- Grasshopper 3. Bridge's genic balance theory Unit III 4. Eye colour in drosophila Unit V 5. Bacteriophage infection 6. Biochemical evidences in DNA genetic material 7. Molecular basis of gene mutation Population genetics	Unit IV 2. Euphenics Unit V 3. Genetic counseling	20%	Suggested by Alumni and Faculty
11.	2020-2023	IV	20UZY406	Major Practical – II (Non-Semester Pattern) Cell biology & Genetics	Spotters : Cell Biology 1. Cell cycle 2. Cancer cell Genetics 3. Pedigree analysis	Spotters : Cell Biology 1. Polytenic chromosome	5%	Suggested by subject expert
12.	2020-2023	IV	20UZY4N3	Non-Major Elective (NME) Food and Nutrition	Nil	Nil	0	-

13.	2020-2023	IV	20UZY4N4	Non-Major Elective (NME) Apiculture (NME)	Unit -II <i>Apis mellifera</i>	Unit- II Relationship between plants and bee- Plant as habitat- symbiosis-pollination	5%	suggested by subject expert
14.	2020-2023	V	20UZY 507	Core Paper – VII Developmental Biology	Unit- I Definition-Ontogeny-Phylogeny Unit-III Comparison of the cleavage and gastrulation of frog and chick – Unit-IV Nuclear transplantation types- techniques	Unit-I Introduction to developmental biology	10%	Suggested by subject expert
15.	2020-2023	V	20UZY508	Core Paper – VIII Biotechnology	Unit I : Gene map lambda DNA Unit III Monoclonal antibody Retroviral and embryonic methods Unit V : Biochips Possible dangers of GEO Implementation of biosafety guidelines	Unit III. Biolistics (SS) Unit IV: Scope and application of nano biotechnology	10%	Suggested by Alumni
16.			20UZY509	Core Paper – IX Biostatistics& Biophysics	Unit II 1. Merits and demerits Unit III 2. Null hypothesis 3. Probability Unit IV 4. Mechanism of Bioluminescence Unit V 5. Spectrophotometer	Unit II 1. Mean deviation -Measures of dispersion Unit III 2.Student t test	5%	Suggested by Faculty
17.	2020-2023	V	20UZY510	Core Paper – X Biochemistry and Bioinformatics	Unit -I 1.Hexoses 2.Nonreducing sugar and reducing sugar 3.Heparin 4.Starch 5.Wax 6.Glycolipids 7.Fattyacid and cholesterol	-	20%	Suggested by Alumni
18.	2020-2023	V	20UZY 5E1	Core Elective Paper – I Medical Laboratory Techniques	Unit-I Automatic analyzer Unit-V Venereal Disease	Unit-I Urinometer, Albumino meter Unit-V Gonorrhoea Disease	15%	Suggested by subject expert

19.	2020-2023	V	20UZY 5E2	Core Elective Paper – II Poultry Science and Management Technology	Nil	Nil	0%	-
20.	2020-2023	VI	20UZY611	Core Paper –XI Animal Physiology and Endocrinology	Unit-III Sexual cycle in human: Puberty, Spermiation, Ovulation, Menstrual cycle Pregnancy and Parturition.	-	10%	Suggested by the Faculty
21.	2020-2023	VI	20UZY612	Core Paper – XII Ecology & Evolution	-	-	0%	-
22.	2020-2023	VI	20UZY613	Core Paper – XIII Microbiology and Immunology	Unit II Bacteriophages _Life cycle Lytic and Lysogenic Life cycle	Unit II Structure of Bacteriophages Unit III Biochemical changes of Food Spoilage Unit –V Types of tumor -, Causes of tumor –factors involved in tumor immunity	10%	Suggested by subject expert
23.	2020-2023	VI	20UZY6E3	Core Elective Paper-III Sericulture	Unit I. 1. Central and state silkboard functions	Unit III 1. Bed cleaning and its methods Unit IV 2. Chawki rearing in india Unit V 3. Indian uzi fly	10%	Suggested by faculty
24.	2020-2023	VI	20UZY6E4	Core Elective Paper-IV Insect Pest Management	Nil	Nil	0%	-
25.	2020-2023	VI	20UZY6E5	Core Elective Paper-III Aquaculture	-	-	0%	-
26.	2020-2023	VI	20UZY614	Major Practical – III (Non-Semester Pattern) Developmental Biology, Animal Physiology & Endocrinology,	Preparation of haemincrystals Frog yolk plug Chick egg Mammalian heart Sahli's heamometer	Estimation of haemoglobin by using haemoglobinometer Estimation of Erythrocyte Sedimentatio rate in human Estimation of glucose using	25%	Suggested by Students

				Biostatistics & Biophysics, Bioinformatics & Biochemistry & MLT	BP apparatus PH meter Ultracentrifuge Structure of sucrose Structure of starch	digital method Frog- Blastula Placenta of sheep Human foetus BLAST		
27.	2020- 2023	VI	20UZY 615	MAJOR ZOOLOGY PRACTICAL - IV (Ecology, Evolution, Biotechnology, Microbiology, Sericulture and Aquaculture)	SPOTTERS Sacculina on Crab Coccyx Peppered moth	SPOTTERS Sucker fish Giraffe Lung fish Silk gland Pebrine Lernaeasis Live feed-Daphnia	10%	Suggested by faculty
28.	2020- 2023	VI	20UZY6S3	Skill Based Elective (SBE) Vermiculture	Unit III Diseases and Predators of Earthworm control measures Unit IV Biomass Nutrient content of Soil and Biomass Unit V Nutrient value of vermicompost	Unit I Economic importance of Earthworm Unit III Collection of earth worms, Methods of vermicomposting Unit IV Indoor vermicomposting Precautions need for vermicomposting Nutrient content of vermicompost	20%	Suggested by subject expert
29.	2020- 2023	VI	20UZY 6S4	Skill Based Elective (SBE) Biopharmaceuticals (SBE)	Unit V Quality assurance and quality control Fundamental of quality assurance, benefits, structure of quality management, documentation, quality assurance in manufacturing	-	0	-

Signature of the BoS Chairman

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For

Principal
PRINCIPAL

W. V. COLLEGE, POLLACHI

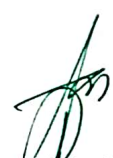
Department of Zoology
Board of Studies 2020- 2021

New papers (Courses) introduced

S.No	Year	Sem	Paper Code	Paper Title	Changes		% of modification	Reason for Introduction
					Removed (if any)	Added (if any)		
1	2020-2023	VI	20UZY6E6	Core Elective Paper – VI Wildlife Conservation	Dairy farming and management Technology	Wildlife Conservation	100%	Suggested by Alumni


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For

Principal
NALLAMUTHU GOUNDER MAHALINGAM COLLEGE, POLLACHI

Nallamuthu Gounder Mahalingam College - Curriculum Development Cell
B. Sc. Zoology Scheme of Examination For (2020– 2023Batch),
Choice Based Credit System & OBES

Part No	Course Code	Course title	Lecture+ Practical Hours/ week	Duration of Exam Hrs	Max. Marks			Credit Point
					Internal	End-of-Semester	Total	
	Semester I							
I	20UTL101	Tamil/Hindi Paper – I	6	3	30	70	100	3
II	20UEN101	English Paper – I	5	3	30	70	100	3
III	20UZY101	Core Paper –I Nonchordata	7	3	30	70	100	4
		Major Practical – I (Non-Semester Pattern) Nonchordata & Chordata	2	-	-	-	-	-
	20UBY1A1	Ancillary Zoology Paper–I Nonchordata & Chordata	6	3	30	70	100	4
		Ancillary Zoology Practical (Paper–I &II)	2	-	-	-	-	-
IV	20UHR101	Human Rights	1	2	-	50	50	2
	20HEC101	HE – (Personal values & SKY Yoga practice -I)	1	2	25	25	50	1
V		Extension activities (See Annexure –I)						
							500	17
	Semester II							
I	20UTL202	Tamil/ Hindi Paper – II	6	3	30	70	100	3
II	20UEN202	English Paper – II	5	3	30	70	100	3
III	20UZY202	Core Paper –II Chordata	6	3	30	70	100	4
	20UZY203	Major Practical – I (Non-Semester Pattern) Nonchordata & Chordata	2	3	40	60	100	4
	20UBY2A2	Ancillary Zoology Paper –II Economic Zoology	6	3	30	70	100	4
	20UBY2A3	Ancillary Zoology Practical (Non-Semester Pattern) Paper I & II	2	3	40	60	100	2
	20EVS201	Environmental Studies (EVS)	2	2	-	50	50	2

IV	20HEC202	HE – Family values SKY Yoga practice –II	1	2	25	25	50	1
V		Extension activities (See Annexure –I)						
							700	23
	Semester III							
I	20UTL303	Tamil/ Hindi Paper – III	5	3	30	70	100	3
II	20UEN303	English Paper – III	6	3	30	70	100	3
III	20UZY304	Core Paper –IV Cell Biology	7	3	30	70	100	4
		Major Practical – II (Non-Semester Pattern) Cell biology & Genetics	2	3	-	-	-	-
	20UZY3A4	Ancillary Chemistry Paper – I	6	3	30	70	100	4
		Ancillary Chemistry Practical	2	-	-	-	-	-
IV	20UZY3N1/ 20UZY3N2	Non-Major Elective (NME) Public health and hygiene/ Ornamental fish culture/ Basic Tamil paper/ AD Tamil paper	1	2	-	50	50	2
	20HEC303	HE – (Professional values & SKY Yoga practice -III)	1	2	25	25	50	1
V		Extension activities (See Annexure –I)						
							500	17
	Semester IV							
I	20UTL404	Tamil/ Hindi Paper – IV	5	3	30	70	100	3
II	20UEN404	English Paper – IV	6	3	30	70	100	3
III	20UZY405	Core Paper –V Genetics	7	3	30	70	100	4
	20UZY406	Major Practical – II (Non-Semester Pattern) Cell biology & Genetics	2	3	40	60	100	4
	20UZY4A5	Ancillary Chemistry Paper – II	6	3	30	70	100	4
	20UZY4A6	Ancillary Chemistry Practical	2	3	40	60	100	2
IV	20UZY4N3 /20UZY4N 4	Non-Major Elective (NME) Food and nutrition/ Apiculture / Basic Tamil paper/AD Tamil paper	1	2	-	50	50	2
	20HEC404	HE – (Social values & SKY Yoga practice -IV)	1	2	25	25	50	1
V		Extension activities (See Annexure –I)				50	50	1
							750	24

	Semester V							
III	20UZY507	Core Paper – VII Developmental Biology	5	3	30	70	100	4
	20UZY508	Core Paper – VIII Biotechnology	5	3	30	70	100	4
	20UZY509	Core Paper – IX Biostatistics & Biophysics	5	3	30	70	100	4
	20UZY510	Core Paper – X Biochemistry and Bioinformatics	5	3	30	70	100	5
	20UZY5E1/ 20UZY5E2	Core Elective Paper – I & II Medical Laboratory Technique / Poultry Science And Management Technology	4	3	30	70	100	5
		Major Practical – III (Non-Semester Pattern) Developmental Biology, Animal Physiology & Endocrinology, Biostatistics & Biophysics, Bioinformatics & Biochemistry and MLT	2	-	-	-	-	-
		Major Practical – IV (Non-Semester Pattern) Ecology, Evolution, Biotechnology, Microbiology, Sericulture and Aquaculture	2	-	-	-	-	-
IV	20UZY5S1/ 20UZY5S2	Skill Based Elective (SBE)–Online Network and Information Security Cyber security – Ethical Hacking	1	2	-	50	50	2
	20GKL501	Skill Based Elective (SBE)–Online General Knowledge & General Awareness	SS	2	-	50	50	2
	20HEC505	HE – (National values & SKY Yoga practice -V)	1	2	25	25	50	1
							650	27
	Semester VI							
III	20UZY611	Core Paper – XI Animal Physiology & Endocrinology	5	3	30	70	100	5
	20UZY612	Core Paper – XII Ecology & Evolution	5	3	30	70	100	4
	20UZY613	Core Paper – XIII Microbiology & Immunology	5	3	30	70	100	4
	20UZY6E3/ 20UZY6E4	Core Elective Paper-III & IV Sericulture/ Insect Pest Management	4	3	30	70	100	3
	20UZY6E5/ 20UZY6E6/ 20UZY6E7	Core Elective Paper –V&VI Aquaculture/ Wildlife Conservation/ Dairy farming and management Technology	5	3	30	70	100	5

	20UZY614	Major Practical – III (Non-Semester Pattern) Developmental Biology, Animal Physiology & Endocrinology, Biostatistics & Biophysics, Bioinformatics & Biochemistry & MLT	2	3	40	60	100	4
	20 UZY615	Major Practical – IV (Non-Semester Pattern) Ecology, Evolution, Biotechnology, Microbiology, Sericulture and Aquaculture	2	3	40	60	100	4
IV	20UZY6S3	Skill Based Elective (SBE) Vermiculture	1	2	-	50	50	2
	20UZY6S4	Skill Based Elective (SBE) Biopharmaceuticals						
	20HEC606	HE – (Global values & SKY Yoga practice -VI)	1	3	25	25	50	1
							800	32
		**Grand total					3900	140


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Principal :-

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Programme code:	B. Sc	Programme Title :	Zoology	
Course Code:	20UZY101	Title	Batch :	2020-2023
		Core Paper – I Nonchordata	Semester	I
Hrs/Week:	7		Credits:	4

Course Objectives

- To understand the different animal groups under different phyla
- To know the Economic importance of Nonchordata
- To keep in mind the internal structure of Nonchordate organisms
- To study about the general topics of each phylum
- To understand the structure and inter-relationship between organisms.

Course Outcomes (CO)

K1	CO1	To remember the outline Classification of Nonchordata
K2	CO2	To understand the structure and inter-relationship between nonchordate animals.
K3	CO3	To deploy the each phylum with an example
K4	CO4	To discuss the general topics of each phylum
K5	CO5	To acquire knowledge about internal structure of Nonchordate organisms

Unit	Content	Hrs
Unit I	- General characteristics of phylum Nonchordata - Outline Classification of Nonchordata up to class level Phylum Protozoa: <i>Paramecium</i> – Structure- Feeding- Binary fission and Conjugation. - Protozoa in Human Diseases	19Hrs
Unit II	Phylum Porifera : <i>Leucosolenia</i> - Structure - Reproduction and Life cycle, Canal system in sponges. Phylum Coelenterata: <i>Obelia colony</i>– Structure - Reproduction and Life cycle. - Polymorphism in coelenterates Phylum Platyhelminthes: <i>Taenia solium</i> – Structure Reproductive system and Life cycle. Parasitic adaptations in Helminth worm	18Hrs
Unit III	Phylum Aschelminthes: <i>Ascaris lumbricoides</i> –Structure – Excretory system-Reproductive system and life cycle Phylum Annelida : Neries – Structure - Digestive system - Excretory system and Reproductive system. - Metamerism in Annelids	18Hrs
Unit IV	Phylum Arthropoda: Cockroach – Structure - Mouth parts – Digestive – Respiratory – Circulatory - Nervous and Reproductive systems. - Peripatus as a Connecting Link. - Arthropod Vectors and Human diseases.	18Hrs
Unit V	Phylum Mollusca: Pila – Structure Respiratory system and Reproductive Systems. <i>Economic importance of Mollusca</i> Phylum Echinodermata : Sea star – Structure- Digestive system Water vascular system and Reproductive system.	18Hrs

	○ Larval forms of Echinoderms and their significance.	
Total Contact Hrs		91Hrs

- *Italics denoted as self study topics*

Assignment, Seminar, Power point presentation, Google class room

Book for Study:

1. Nair N.C., Leelavathy S., Soundarapandian N and Arumugam, N. (2019) A text book of Invertebrates – Saras Publication, Nagercoil.

Reference:

1. Ekambaranatha Iyyer, (2016) A Manual of Zoology, Part I & II, Invertebrata, 5th edition Volume I and II. S. Viswanathan(Printers and Publishers)
2. Kotpal R. Agarwal S.K& Khetarpal R.P. (2010) 10th Edition Modern Text Book of Zoology, Invertebrata, , Rastogi Publications.
3. Jordan E.L & Verma J. K (1995) Invertebrate Zoology, S. Chand & Company, New Delhi.
4. Ganguly B.B Sinha.A & Adhikari.S. (1977) 3rdEdition Biology of Animals, Vol –I, Invertebrates New Central Book Agencies.
5. Dhami P.S & Dhami J.K (1990) Invertebrate Zoology, S. Chand & Company

Mapping

CO	PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1		H	H	M	M	H
CO2		H	M	H	H	H
CO3		M	M	H	M	M
CO4		H	H	M	H	M

H-High; M-Medium; L-Low


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Programme code:	B. Sc	Programme Title :	Zoology	
Course Code:	20UZY202	Title	Batch :	2020-2023
		Core Paper – II Chordata	Semester	II
Hrs/Week:	6		Credits:	4

Course Objectives

- To acquire a basic knowledge of Chordates
- To know the knowledge of classification of organisms
- To understand the biodiversity of organisms
- To study the inter –relationship of organisms
- To understand the animal behaviours

Course Outcomes (CO)

K1	CO1	To keep in mind the outline Classification of Chordata
K2	CO2	To understand the morphology and anatomy of Chordata
K3	CO3	To execute inter-relationship between Each class
K4	CO4	To discuss the biodiversity of chordates
K5	CO5	To acquire the knowledge of organisms

Unit	Content	Hrs
Unit I	General characters and outline classification of Phylum Chordata up to class level with suitable examples. General characters and affinities of a) Amphioxus b) Balanoglossus c) Ascidian • Class Pisces Type study – Shark- External- Placoid scale - Digestive system - Respiratory and - Excretory system - Reproductive system ○ <i>Parental care in Fishes</i>	16Hrs
Unit II	• Class Amphibia Type study – Frog- External - Girdles and Limbs - Respiratory system – Heart- Brain - Urino-genital system. ○ Origin of Amphibia Parental care in frog .	16Hrs
Unit III	• Class Reptilia Type study– Calotes- Externals - Digestive system – Brain- Excretory system- Reproductive system ○ Poisonous and Non-Poisonous Snakes. ○ Poison apparatus and biting mechanism in Snakes - <i>First –Aid for Snake Bite.</i>	16Hrs
Unit IV	• Class Aves Type study - Pigeon- External – Synsacrum - Flight muscles - Digestive system - Respiratory system- Brain- Eye and Urino – genital system. ○ Flight adaptation ○ Migration in Birds	15Hrs
Unit V	• Class Mammalia Type study – Rabbit- External– Heart – Brain – Digestive system - Excretory system – Reproductive system ○ Salient features of Protheria - Metatheria - Eutheria	15Hrs
Total Contact Hrs		78 Hrs

- *Italics denoted as self study topics*

Book for Study:

1. Thangamani, A., Prasanna kumar, S., Narayanan, L.M., and Arumugam, N. (2019) (10th Edition) A text book of Chordata, Saras publications, 114/35 G, A.R.P Camp Road, Periaivillai, Kottar PO, Nagercoil -629 002, Kanyakumari
2. R.L.Kotpal (3rd Edi, 2012), Modern text book of Invertebrates, Rastogi Publications.Meerut

Reference:

1. Ekambaranatha Iyer, (2008) Manual of Zoology, Vol.II (6^h Edition). S.Viswanathan PVT Ltd., Parts I & II. Viswanathan & Co.
2. Jordan, E.L. and Verma, P.S. (2006) Chordate Zoology. S. Chand & Company LTD., Ram Nagar, New Delhi. 110055.

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	H	H
CO2	M	M	H	H	M
CO3	H	H	H	M	M
CO4	M	M	H	M	M

H-High; M-Medium; L-Low

Head of the Department

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Programme code:	B. Sc	Programme Title :	Zoology	
Course Code:	20UBY2A2	Title	Batch :	2020-2023
		Ancillary Zoology Paper – II Economic Zoology	Semester	II
Hrs/Week:	6		Credits:	4

Course Objectives

- To understand the applications of zoology
- To explore entrepreneurship in zoology
- To study the importance of organic farming
- To gain knowledge in technical and ecological aspects of zoology
- To understand the economical value of farm animals.

Course Outcomes (CO)

K1	CO1	To remember aquaculture application in day to day life
K2	CO2	To get the idea of economical application of apiculture and dairy
K3	CO3	To acquire knowledge about the silkworm rearing
K4	CO4	To apply knowledge in self employment of poultry management
K5	CO5	To understand the knowledge in vermicompost preparation

Unit	Content	Hrs
Unit- I	AQUACULTURE • Scope of Aquaculture • Type of Fisheries - Inland fisheries and Marine fisheries 1. Culturable organisms - Fin fishes 2. Fishes diseases ○ Bacteria - Erythroderma , Bacterial Gill Rot ○ Virus - EUS,IPN, VHS ○ Fungal - Saprolegniasis 3. Oyster culture - Edible oyster and Pearl oyster	16Hrs
Unit -II	APICULTURE • Scope of Apiculture • Races of <i>A. indica</i>, <i>A. mellifera</i> and <i>A. dorsata</i> • Products of Bee Keeping - Royal jelly, Honey, Wax and Bee venom DAIRY FARMING • Scope of dairy farming • A typical dairy farm • Dairy animals: cow • Live stock diseases - Mastitis and Foot and Mouth disease(FMD) • Nutritive value of milk • Dairy By-products	16Hrs
Unit -III	SERICULTURE	16Hrs

	• Scope of sericulture • Optimum conditions for mulberry growth • Vegetative preparation – Stem cutting • Structure of silkworm and silk gland • Life cycle of <i>Bombyx mori</i> • Rearing appliances • Disinfection • Diseases of silkworm -Pebrine and Viral flacherie • Cocoon market	
Unit- IV	POULTRY KEEPING • Scope of poultry • Construction of poultry house • Rearing of Broilers and Layers • Diseases of poultry 1. Fowl pox 2. Coccidiosis 3. Ranikhet disease 4. Bird Flu • <i>Nutritive value of Egg</i>	15Hrs
Unit -V	VERMICULTURE • Scope of Vermiculture • Classification of earthworm - based on habitat • Collections of earthworm • Preparation of vermibed • Procedure and maintenance of indoor vermicompost • Vermiwash • Packaging of vermicompost and its marketing	15Hrs
Total Contact Hrs		78

➤ *Italics denoted as self study topics*

Power point Presentations, Seminar , Assignment, Discussion, Case study, Google class room

Book for Study:

1. Arumugam, N. (2018) Applied Zoology, Saras Publication, 114/35 G ARP Camp Road, Periaivilai, Nagercoil, Kanyakumari – 629 002

Books for Reference:

1. Ganga and Sulochana Chetty, (1999) An introduction to sericulture, 2nd Edition, Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi
2. Arumugam, N.(2013) Economic Zoology, 1st edition, Saras Publication, 114/35 G ARP Camp Road, Periaivilai, Nagercoil, Kanyakumari – 629 002
3. Shukla & Upadhyay,(2001) Economic Zoology - Rastogi Publication, Shivaji Road, Meerut 250 002
4. Arumugam, N. (2012) Aquaculture -, 1st edition, Saras Publication, 114/35 G ARP Camp Road, Periaivilai, Nagercoil, Kanyakumari – 629 002
5. Ezhili, N. & Thirumathal, K. (2008) A hand book for sericulture, Shrishti Impression, Coimbatore
6. Tripaty, S.N. (2004) Food biotechnology. Doarinant Publishing and distributions, New Delhi.

110 002.

7. Tarid Kumar Banerjee (2017), Applied Zoology, New central book agency pvt. ltd. Kolkata

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	H	H
CO2	H	M	H	H	H
CO3	M	H	H	M	M
CO4	M	H	H	L	H

H-High; M-Medium; L-Low


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Programme code:	B. Sc	Programme Title :	Zoology
Course Code:	20UZY405	Title	Batch : 2020-2023
		Core Paper – V Genetics	Semester IV
Hrs/Week:	7	Credits:	4

Course Objectives

- To Study the basic concepts of hereditary and variations.
- To understand the basic Mendel's Laws.
- To understand the inheritance of genetic disorders in man.
- To acquire knowledge of Cancer cells and treatment.
- To know about the applied aspects of genetics

Course Outcomes (CO)

K1	CO1	To keep in mind the genetic disorders in man.
K2	CO2	To understand the chemical basis of heredity.
K3	CO3	To deploy the heritable traits in families and populations.
K4	CO4	To sort of genetic concepts including health and diseases
K5	CO5	Construct personal and family pedigrees and integrate genetic testing options in genetic counselling practices

Existing Syllabus

Unit	Content	Hrs
Unit I	• Mendel's Monohybrid and Dihybrid experiments • Mendel's Laws - Problems. • Interaction of genes Lethal genes and its types <i>Epistasis</i> • Polygenic inheritance: Skin colour in man 1:4:6:4:1 • Multiple alleles (problems) ○ Coat colour in rabbit ○ ABO blood groups in man ○ Rh factor	19Hrs
Unit II	• Linkage Complete and incomplete linkage • Chromosome maps: ○ Chromosome map in <i>Drosophila</i> (Three Point Cross) • Sex determination: ○ Homogametic and heterogametic ○ Hymenopteran type – Honey bee ○ Gynandromorph – <i>Drosophila melanogaster</i> ○ Hormonal control – Free Martin Cattle.	18Hrs
Unit III	• Sex linked inheritance ○ Haemophilia and colour blindness in man – problems ○ Hairy pinna in man. • Euploidy and Aneuploidy • Inbreeding and outbreeding • Twins	18Hrs
Unit IV	Non-disjunction ○ Anomalies of Autosomes – Down's syndrome and Patau's syndrome . ○ Anomalies of Allosomes– Klienfelter's syndrome and Turner's syndrome • Pedigree analysis • Inborn Errors of metabolism ○ Phenylketoneuria, Alcaptonuria and Albinism • Eugenics and Euphenics	18Hrs
Unit V	• Nucleic acids as genetic material: - DNA as Genetic material: ✓ Bacterial transformation ✓ Bacterial conjugation ✓ Transduction - Indirect evidences of DNA as genetic material - RNA as Genetic material (TMV) • Genetic counseling	18Hrs
Total Contact Hrs		91

➤ *Italics denoted as self study topics*

Power point Presentations, Seminar, Assignments, Google classroom

Books for Study:

1. Veer Bala Rastogi (2018) 4th edition. Genetics. Kendhranath, Meerut.

- Meyyan R. P. (2018) 12th Edition, Genetics– Saras Publications, 114/35 G, A.R.P Camp Road, Periaivillai, Kottar PO, Nagercoil -629 002, Kanyakumari

Books for Reference:

- Miglani G. S. (2002) 1st edition. Advanced Genetics. Narosa Publishing House, New Delhi, 110002.
- Russell, J. (1987) 2nd edition. Essential Genetics. Black well Scientific Publication London
- Verma and Agarwal (2008) 3rd edition. Genetics. S. Chand & Company, Ltd. New Delhi, 110055
- Gupta, P. K. (2007) 3rd edition .Genetics. Rastogi Publication, Meerut.
- Kottari, L., *et al.*, (2009) 5th edition Essentials of Human Genetics. University Press Private Ltd. Hyderabad, 500029.
- E.D. Garber (1979) Reprint, Cytogenetics – An Introduction. TATA McGRAW – Hill Publishing Company Ltd. New Delhi
- Ajay Paul (2018) – Text book of genetics , Books and allied company, Kolkata
- P.S. Verma and V.K Agarwal (2012) Cell Biology, Genetics, Molecular biology, Evolution and Ecology – S.Chand & Company, New Delhi

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	H	H
CO2	H	M	H	M	H
CO3	M	M	M	M	M
CO4	M	H	H	M	H

H-High; M-Medium; L-Low

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Programme code:	B. Sc	Programme Title :	Zoology	
Course Code:	20 UZY510	Title	Batch :	2020-2023
		Core Paper - X Biochemistry and Bioinformatics	Semester	V
Hrs/Week:	5		Credits:	5

Course Objectives

- To study the metabolism of biomolecules.
- To understand the disorders of metabolism.
- To study the basic bioinformatics tools and it uses
- To acquire the knowledge on biological databases.
- To know the chemical structure of macromolecules and their metabolic activity.

Course Outcomes (CO)

K1	CO1	To keep in mind the basic bioinformatic tools and its uses.
K2	CO2	To comprehend the genomic study and sequence analysis
K3	CO3	To apply the basic and applied knowledge of Biochemistry
K4	CO4	To sort the core principles of biochemistry.
K5	CO5	To acquire knowledge about the phylogenetic analysis

Unit	Content	Hrs
Unit I	Biochemistry • Classification of Carbohydrates: ○ Monosaccharides : Pentoses ○ Disaccharides ○ Polysaccharides - Homopolysaccharide and Heteropolysaccharide • Classification of Lipids: ○ Simple Lipids - Fats ○ Compound lipids -Phospholipids ○ Derived lipids -Glycerol • Classification of Proteins: ○ Structure : Simple – Conjugated and Derived proteins. ○ Solubility: Globular and Fibrous proteins	13Hrs
Unit II	• Metabolism of carbohydrates: Glycolysis-Glycogenesis- Kreb's cycle & Glycogenolysis • Metabolism of lipids :β-oxidation of fatty acids • Metabolism of proteins :Transamination and Deamination	13Hrs
Unit III	• Scope of Bioinformatics • Databases ○ Biological database (Properties and classification) ○ Specialized database • Protein sequence database – SWISS-PROT • Data mining • Virtual Library	13Hrs
Unit IV	• Genomics –Classification and applications • Proteomics –Classification and applications • Drug designing • Human genome project ○ Goals and techniques ○ Potential benefits • <i>Bioinformatics tools and its uses</i>	13Hrs
Unit V	• Similarity tool : BLAST • Visualizing tool : RasMol • Miscellaneous tool : Webcutter • Phylogenetic analysis - Definition and applications • Construction of phylogenetic tree • Structure of rooted tree	13Hrs
Total Contact Hrs		65

➤ *Italics denoted as self study topics*

Power point Presentations, Seminar, Assignment, group discussions, Google class room ,Case study

Books for Study:

1. Sundaralingam R.& Kumaresan V. (2018) Bioinformatics , Saras Publication, 114/35G . A.R.P Camp road, Periaivillai, Kottar PO, Nagercoil, Kanyakumari,
2. Thulsi Fatima, (2016) Biochemistry - Saras Publication,114/35G, A.R.P Camp Road, Periaivilai, Kottar Post, Nagercoil - 629002 , Tamil nadu, India

Books for Reference:

1. Simminder Kaur Thukral, (2007) Bioinformatics-Orpita Bosu, Oxford University Press, New Delhi 110001
2. Attwood T.K. and Parrysmith D.J. (1999) Introduction to Bioinformatics - Addison Wesley Longman, Harlow.
3. Fuelker , M.H. (2009) Bioinformatics – Applications in Life and Environmental Sciences Capital Publishing Company, New Delhi.
4. Ignacimuthu, S. (2005) Basic Bioinformatics –Narosa Publishing House, New Delhi.
5. Sharma, Munjal & Shankar (2008) A text book of Bioinformatics –, Rastogi Publications, Meerut, India,
6. Jin Xiong, (2006) Essential Bioinformatics Cambridge University Press
Subramanian C. (2010) Genomic Bioinformatics- Dominant Publisher, New Delhi.
7. Rastogi, S. C. (1995) Biochemistry - Tata McGraw-Hill Education,
8. Sathyanarayana U.& Chakrapani, U. (2009) 2nd Edition, Essential of Biochemistry - Books & Allied pvt.ltd 83/1, Beliaghata main road, Kolkata 700010, India

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	H	H
CO2	H	M	H	H	H
CO3	M	H	H	M	M
CO4	M	H	H	H	H

H-High; M-Medium; L-Low


Head of the Department

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Principal

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Programme code:	B. Sc	Programme Title :	Zoology
Course Code:	20UZY614	Title MAJOR PRACTICAL-III (Developmental biology, Biostatistics& Biophysics, Animal Physiology and Endocrinology, Bioinformatics and Biochemistry and Medical Laboratory Technique)	Batch : 2020-2023 Semester V & VI
Hrs/Week:	2		Credits: 4

Course Objectives

- To gain the practical knowledge on Zoology
- To know about the structure and functions of various biomolecules
- To attain knowledge on blood cell count and its importance
- Learn the structure of embryo of various animals
- Learn the methods to estimate the glucose and haemoglobin in blood samples

Course Outcomes (CO)(for Practicals Only)

K1	CO1	To recollect the importance of laboratory test
K2	CO2	To understand the normal level of human samples
K3	CO3	To apply the instruments used in biological experiment.
K4	CO4	To understand the structure and functions of endocrine glands.
K5	CO5	To know about the bioinformatic tools.

Content

EXPERIMENTS

- Analysis of excretory products
- Total count of RBC
- Total count of WBC
- Estimation of haemoglobin by using haemoglobinometer
- Preparation of Blood smear
- Bleeding and clotting time
- Estimation of Erythrocyte Sedimentation(ESR) in human
- Find the mean and Standard deviation of the given samples
- Estimation of glucose by using digital method

SPOTTERS

Developmental Biology (structure/developments)

- Egg of frog
- Cleavage of frog
- Blastula of frog
- Chick embryo - 24 hours
- Chick embryo - 72 hours
- Chick embryo - 96 hours
- Placenta of sheep
- Human foetus

Biostatistics and Biophysics (Statistical importance)

- Multiple bar diagram
- Pie diagram

• Frequency polygon • Compound microscope • Electron microscope (TEM) • Thin Layer Chromatography (TLC) • Electrophoresis – PAGE Animal physiology & Endocrinology (structure and function) • T. S. of thyroid gland • T. S. of ovary • T. S. of testis • Mammalian Eye • Mammalian Ear • Mammalian Kidney Medical Laboratory Technique (MLT) – (structure, principle and uses) • Haemocyto meter • Albuminometer • Automatic blood pressure monitor • Urinometer • Autoclave • UV Spectrophotometer Bioinformatics and Biochemistry (Structure and uses) • Phylogenetic tree (Rooted tree) • RasMol (Visualization tool) • BLAST • Structure of pentose • Structure of cholesterol
Content
Total Contact Hrs 52

Mark Distribution:

Total Marks	Internal(CIA)	Marks	End of semester Practical Examination (ESE)	Marks
100	Practical Skill/observation	10	Experiments	20
			Major Practical	
			Minor Practical	10
	Model Practical Examination	20	Spotters	20
	Record work	10	Record	10
	Total Marks	40	Total Marks	60

Hands on experience in practicals, Activity,

Books for Reference:

1. Arumugam .N. (2017) Developmental Zoology - Saras Publication,114/35G, A.R.P Camp Road, Periyavilai, Kottar Post, Nagercoil - 629002 , Tamilnadu, India.

2. H. R. Singh and Neerajkumar, (2014). Animal Physiology and biochemistry, Vishal Publishing Co. Jalandhar, Delhi
3. Ramnik Sood, Medical Laboratory Techniques (MLT). (1999) 5th edn. Jaypee Brothers Medical publishers (P) Ltd. Delhi
4. Mariakuttikan , A and Arumugam, N. (2014). Animal Physiology . Saras publication. Nagarcoil, Kanyakumari Dist. Tamil Nadu.

Mapping

PSO CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H
CO2	M	H	M	H	M
CO3	H	H	H	M	M

H-High; M-Medium; L-Low


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Programme code:	B. Sc	Programme Title :	Zoology	
Course Code:	20UZY6S3	Title	Batch :	2020-2023
		Vermiculture (SBE)	Semester	VI
Hrs/Week:	1		Credits:	2

Course Objectives

- To study the importance of vermiculture
- To acquire the knowledge of external and internal structure of earthworm
- To study the life cycle of earthworm
- To know the knowledge about nutrient value of vermicompost
- To understand the preparation methods of vermibed

Course Outcomes (CO)

K1	CO1	To remember the role of worm farming in Modern Farming
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K2	CO2	To understand Economic importance of vermiculture
K3	CO3	To deploy role of Vermiculture in protecting the environment and managing the waste
K4	CO4	To analyze the potential of vermicompost as an alternative to chemical fertilizers
K5	CO5	To acquire the knowledge about various type of earthworm

Unit	Content	Hrs
Unit I	• Systematic position of Earthworm – Habit and Habitat - Commercial varieties of Earthworm for Vermicomposting. ○ <i>Economic importance of Earth worm</i>	3Hrs
Unit II	• Type study: Earthworm: Megasclolex sp., ○ External character ○ Digestive system- ○ Respiratory system ○ Excretory system ○ Reproductive system	3Hrs
Unit III	• Life cycle of Earthworm • Collection of earth worms, • Methods of vermicomposting	2Hrs
Unit IV	○ Types of soil ○ Indoor vermicomposting ○ Precautions need for vermicomposting ○ Biodegradable wastes ○ Nutrient Content of vermicompost	2Hrs
Unit V	○ Preparation of Vermibed ○ Maintenance of Composting pit ○ Collection of vermicompost ○ <i>Vermiwash</i> ○ Marketing of vermicompost	3Hrs
Total Contact Hrs		13

➤ *Italics denoted as self study topics*

Power point Presentations, Seminar, Assignment , Case study

Books for study:

1. Seethlakshmi. M. and Santhi. R. (2012) Vermitechnology, Saras publication, Nagercoil, Tamilnadu.
2. Nair N.C., Leelavathy S., Soundarapandian N and Arumugam, N. (2018) A text book of Invertebrates – Saras Publication, Nagercoil, Tamilnadu

Books for Reference:

1. Ekambaranatha Iyyer, (1990) A Manual of Zoology, Part I & II, Invertebrata, Revised edition. S. Viswanathan(Printers and Publishers)
2. Odum, E. P (1971) Fundamentals of ecology W.B. Sanders Company, London

- Gupta. P. K. (2005) Vermicomposting for sustainable agriculture. Agrobios. Jothpur. India
- Rana. S. V. S. (2010) Environmental biotechnology. Rastogi Publication. Meerut. India
- Aravind Kumar. (2005) Verms and vermitechnology APH Publishing co-operation.

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	H	H
CO2	H	M	H	H	H
CO3	M	H	H	M	M
CO4	M	H	H	H	H

H-High; M-Medium; L-Low


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Pollachi - 642 001, Coimbatore District.

Programme code:	B. Sc	Programme Title :	Zoology
Course Code:	20UZY6E6	Title	Batch : 2020-2023
		Core Elective Paper – VI	Semester VI
Hrs/Week:	5	Wildlife Conservation	Credits: 5

Course Objectives

- To understand the basic principles wild life and its conservation.
- To know the knowledge about wildlife conservation techniques
- To acquire the knowledge about forest types
- To study the biodiversity conservation and its value.
- To study about the different animal population

Course Outcomes (CO)

K1	CO1	To remember the importance of wildlife and its management techniques
K2	CO2	To understand the methods used in wildlife census
K3	CO3	To apply knowledge about conservation on Indian wildlife
K4	CO4	To analyze and estimate different animal population
K5	CO5	To acquire the knowledge about prioritize of wildlife conservation

Unit	Content	Hrs
Unit I	Scope and importance of Wildlife of India. Definition of Wildlife: Causes of wildlife depletion; Economic importance of wildlife; need for wildlife conservation; rare, endangered, threatened and endemic species of fishes, amphibians, reptiles, birds and mammals in India- <i>India as a mega wildlife diversity country.</i>	13Hrs
Unit II	Forestry and forest entomology: Forest types in India- identification, dendrology; Deforestation & Impacts; Forest Inventory; Natural and artificial regeneration of forests; Harmful Insects and their role in forest economy: Insect pests of important trees of India -Teak, Sal and Bamboo; Beneficial Insects and their role in forest economy: Scavenger insects dung beetles; Pollinators, Predatory insects, and parasitic insects on insect pests; control of forest insects.	13Hrs
Unit III	Wildlife management techniques: Vegetative analyses – Point Centered Quadrat, Quadrat, Strip transect; GIS and Remote sensing in wildlife habitat surveys-Habitat manipulation: food, water, shade improvement; impact and removal of invasive alien species; Making observations and records: field notes, datasheets; Wildlife Photography - Types of cameras, camera traps; Field equipments-altimeter, pedometer, field compass, binoculars; radio collaring; GPS; GIS; Remote sensing in Wildlife management.	13Hrs
Unit IV	Wildlife census techniques: Planning census – Total counts - Sample counts – Basic concepts and applications - Direct count (block count, transect methods, Point counts, visual encounter survey, waterhole survey); Indirect count (Call count, track and signs, pellet count, pugmark, camera trap)- Identifying animals based on indirect signs; Capture-recapture techniques.	13Hrs
Unit V	Conservation of Wildlife: in-situ and ex-situ conservation: <i>Wildlife Sanctuaries, National Parks, Tiger Reserves and Biosphere reserves</i> : Definition, formation, management and administration; Wildlife Projects: Tiger, Elephant, Lion and Hangul; Zoos and Zoological Parks: Definition- Aims of Zoos- Formation and Management of Zoos and Zoological Parks - Central Zoo Authority of India; Captive breeding: Aims, Principles, methods; Role of Government and Non-Governmental organizations in conservation.	13Hrs
Total Contact Hrs		65

➤ *Italics denoted as self study topics*

Books for Study:

1. K.V. Krishnamurthy (2017). An advanced text book on Biodiversity, principles, and practice, Oxford IBH Publishing company private limited, New Delhi
2. Anne E Magurran (1988). Ecological diversity and its measurement. Springer Netherlands

Reference

1. P.K. Maiti and P.Maiti (2011). Biodiversity perception, Peril, and Preservation. PHL Learning private Ltd., New Delhi
2. D. Kar (2010). Biodiversity Conservation prioritization. Swastik publications, New Delhi.
3. Prithipalsingh (2007). An introduction to biodiversity . ANE Books India , New Delhi
4. Asish Ghosh (2003). Natural resource conservation and environment management. APH Publishing Corporation, New Delhi
5. B.S. Badan and Harish Bhatt (2007). Ecotourism. Commonwealth Publishers, New Delhi
6. K.P.Singh and J.S.Singh (EDS). (1991). Tropical ecosystem, ecology and management. Willey eastern limited, New Delhi.

CO	PSO	Mapping				
		PSO1	PSO2	PSO3	PSO4	PSO5
	CO1	H	H	M	H	H
	CO2	M	H	H	M	H
	CO3	H	H	H	M	M
	CO4	H	M	H	M	H

H-High; M-Medium; L-Low


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