

Nallamuthu Gounder Mahalingam College - Curriculum Development Cell
B. Sc. Zoology Scheme of Examination For (2016 – 2019Batch),
Choice Based Credit System & OBES

Part No	Course Code	Course title	Lecture+ Tutorial/ Practical Hours/ week	Duration of Exam Hrs	Max. Marks			Credit Point
					Internal	End-of-Semester	Total	
	Semester I							
I	16UTL101	Tamil/Hindi Paper - I	6	3	25	75	100	3
II	16UEN101	English Paper – I	5	3	25	75	100	3
III	16UZY101	Core Major Paper –I Non-Chordata	6	3	25	75	100	4
		Practical – I (Non-Chordata & Chordata)	2	-	-	-	-	-
	16UZY1A1	Allied Botany Paper–I: Non-Chordata & Chordata	6	3	25	75	100	4
		Allied Botany Practical-(Paper–I &II)	2	-	-	-	-	-
IV	16UHR101	Human Rights	1	2	-	-	50	2
	16HEC101	HE – (Personal values & SKY Yoga practice -I)	2	2	25	25	50	1
V	16 UNC 401/16UNS 402/16 USG 403	Extension Activities (NSS, NCC, Sports & Games)						
	(500)							17
	Semester II							
I	16UTL202	Tamil/ Hindi Paper - II	6	3	25	75	100	3
II	16UEN202	English Paper – II	5	3	25	75	100	3
III	16UZY202	Core Major Paper –II Chordata	5	3	25	75	100	4
	16UZY203	Major Practical – I (Non-Chordata & Chordata)	2	3	40	60	100	4
	16UZY2A2	Allied Botany Paper –II: Applied Zoology	6	3	25	75	100	4
	165UZY2A3	Allied Botany Practical-(Paper I &II)	2	3	40	60	100	2
IV	16EVS201	Environmental Studies	2	2	-	50	50	2
	16HEC202	HE – Family values SKY Yoga practice -II	1	2	25	25	50	1
V	16 UNC 401/16UNS	Extension Activities (NSS, NCC, Sports &						

	402/16 USG 403	Games)						
	(700)							23
	Semester III							
I	16UTL303	Tamil/ Hindi Paper - III	5	3	25	75	100	3
II	16UEN303	English Paper – III	6	3	25	75	100	3
III	16UZY304	Core Major Paper –IV Cell Biology	7	3	25	75	100	4
		Major Practical – II (Cell biology & Genetics)	2	3	-	-	-	-
	16UZY3A4	Allied Chemistry Paper – I	6	3	25	75	100	4
		Allied Chemistry Practical	2	-	-	-	-	-
IV	16UZY3N1/ 16UZY3N2	Public health and hygiene (NME) / Ornamental fish culture (NME) /Basic Tamil paper/AD Tamil paper	1	2	-	50	50	2
	16HEC303	HE – (Professional values & SKY Yoga practice -III)	1	3	25	25	50	1
V	16 UNC 401/16UNS 402/16 USG 403	Extension Activities (NSS, NCC, Sports & Games)						
	(500)							17
	Semester IV							
I	16UTL404	Tamil/ Hindi Paper - IV	5	3	25	75	100	3
II	16UEN404	English Paper – IV	6	3	25	75	100	3
III	16UZY405	Core Major Paper –V Genetics	7	3	25	75	100	4
	16UZY406	Major Practical – II (Cell biology & Genetics)	2	3	40	60	100	4
	16UZY4A5	Allied Chemistry Paper – II	6	3	25	75	100	4
	16UZY4A6	Allied Chemistry Practical	2	3	40	60	100	2
IV	16UZY4N3/ 16UZY4N4	Food and nutrition (NME) / Biopharmaceuticals (NME) /Basic Tamil paper/AD Tamil paper	1	2	-	50	50	2
	16HEC404	HE – (Social values & SKY Yoga practice -IV)	1	2	25	25	50	1

V	16 UNC 401/16UNS 402/16 USG 403	Extension Activities (NSS, NCC, Sports & Games)				50	50	1
	(750)							24
	Semester V							
III	16UZY507	Core Major Paper – VII Developmental Biology & Endocrinology	5	3	25	75	100	4
	16UZY508	Core Major Paper – VIII Biotechnology	5	3	25	75	100	4
	16UZY509	Core Major Paper – IX Biostatistics & Biophysics	5	3	25	75	100	4
		Major Practical - III	2	-	-	-	-	-
		Major Practical - IV	2	-	-	-	-	-
	16UZY510	Core Elective Paper I Medical Laboratory Technique	4	3	25	75	100	5
	16UZY511	Core Elective II Bioinformatics and Cyber Security	3	3	25	75	100	5
IV	16UZY5S1/ 16UZY5S2	Apiculture (SBE)	1	2	-	50	50	2
		Insect pest management (SBE)						
	16GKL501	General Knowledge & General Awareness (SBE)	SS	2	-	50	50	2
	16HEC505	HE – (National values & SKY Yoga practice -V)	1	2	25	25	50	1
	650							25
	Semester VI							
III	16UZY612	Core Major Paper – XII Animal Physiology & Biochemistry	5	3	25	75	100	5
	16UZY613	Core Major Paper – XIII Ecology & Evolution	5	3	25	75	100	4
	16UZY614	Core Major Paper – XIV Microbiology & Immunology	5	3	25	75	100	4
	16UZY615	Core Major Paper – XV Sericulture	4	3	25	75	100	3
	16UZY616	Core Elective - III: Aqua culture	5	3	25	75	100	5
	16UZY617	Major Practical - III	2	3	40	60	100	4
	16UZY618	Major Practical - IV	2	3	40	60	100	4

IV	16UZY6S3/ 16UZY6S4	Vermiculture (SBE)	1	2	-	50	50	2
		Poultry science and management technology (SBE)						
	16HEC606	HE – (Global value s& SKY Yoga practice -VI)	1	3	25	25	50	1
							800	34
		**Grand total					3900	140

* The credits given are applicable only to the students who opt for BasicTamil paper and the credits for Human Excellence papers cannot be given to them.

**Grand total should be equal/below 3900 (For UG Programmes); 2550 (For PG Programmes)

SS – Self study, SBE – Skill Based Elective


Head of the Department

Dr. S. SOMASUNDARAM M.Sc., Ph.D.,
Assistant Professor and head
Department of Zoology
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Pollachi - 642 001.


Principal

Dr. R. MANICKA CHEZIAN M.Sc., M.S., Ph.D.,
PRINCIPAL i/c
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Pollachi - 642 001, Coimbatore District.

Department	ZOOLOGY	
Course	III B.SC	Effective from the Year:2016
Subject Code : 16UZY618 Title : MAJOR ZOOLOGY PRACTICAL – IV (Ecology, Evolution, Biotechnology, Microbiology Sericulture and Aquaculture)		Semester V & VI
Hrs/Week :	2	Credit:4
Objectives	➤ To obtain some practical knowledge in ecology and evolution, biotechnology and microbiology, sericulture and aquaculture ➤ To study the physico-chemical nature of environment	

Components –

1. Experiments -----	2X 10 = 20
2. Spotters-----	4X5 = 20
3. Field visit/ Micro-environmental study/report preparation-----	= 10
4. Record -----	= 10
Total -----	= 60
	=====

Content
EXPERIMENTS • Estimation of dissolved oxygen in water samples. • Estimation of carbondioxide • Determination of primary productivity • Estimation of salinity in water samples • Determination of pH in water samples • Culture medium preparation (Demonstration only) • Milk Methylene Blue Test • Hanging drop preparation • Morphology and morphometric measurements of fish by using model SPOTTERS Ecology • Sacculina on Crab • Leech • Taenia • Physalia • Albunea • Hippa • Anguilla Biotechnology/ Microbiology

- E-Coli
- Plasmids
- Bt – Bacillus thuringiensis
- Biodiesel Plant – Jatropha
- PCR
- Micropipette
- Magnetic stirrer
- Laminar Air Flow
- Gel Electrophoresis

Sericulture

- Life cycle of Bombyx mori
- Silkworm
- Cocoon
- Mulberry shoot
- Mulberry leaf
- Netrika/chandrika
- Leaf chamber

Aquaculture

- Common Carp
- Gill net
- Hook
- Fish parasite – Argulus
- Chinese dip net

Evolution

- Coccox
- Forelimb modifications.
- Fossil
- Peppered moth
- Vermiform appendix

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
			Spotters	20
	Model Practical Examination	20	Field visit /Micro-environmental study/ report preparation	10
	Record work	5	Record	10
	Attendance	5		
	Total Marks	40	Total Marks	60

Reference Books:

1. Ganga , G and Sulochana chetty,(1999). An introduction to sericulture. Oxford and IBH Publishing company Pvt. Ltd. New Delhi
2. Jayasurya, (2013). Economic Zoology. Saras publication. Nagarcoil, Kanyakumari Dist. Tamil Nadu
3. Kumaresan. V (2012) Biotechnology. Saras publication. Nagarcoil, Kanyakumari Dist. Tamil Nadu
4. Odum, E. P (1971) Fundamentals of ecology W.B. Sanders Company, London
5. Arumugam, N. (2014) Aquaculture SARAS Publications, Nagercoil, Tamilnadu.
6. ICAR Publication (2006) 1st edition. Hand book of fisheries and aquaculture, Directorate of information and publicatios of agriculture. Indian Council of Agricultural Research, New Delhi


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					Internal	End-of-Semester	Total	
	Semester I							
I	17UTL101	Tamil/Hindi Paper - I	6	3	25	75	100	3
II	17UEN101	English Paper – I	5	3	25	75	100	3
III	17UZY101z	Core Major Paper –I Non-Chordata	6	3	25	75	100	4
		Practical – I (Non-Chordata & Chordata)	2	-	-	-	-	-
	17UZY1A1	Allied Botany Paper–I: Non-Chordata & Chordata	6	3	25	75	100	4
		Allied Botany Practical-(Paper–I &II)	2	-	-	-	-	-
IV	17UHR101	Human Rights	1	2	-	-	50	2
	17HEC101	HE – (Personal values & SKY Yoga practice -I)	1	2	25	25	50	1
V	17UNC401/ 17UNS 402/ 17 USG 403	NSS NCC Sports & Games						
	500							17
	Semester II							
I	17UTL202	Tamil/ Hindi Paper - II	6	3	25	75	100	3
II	17UEN202	English Paper – II	5	3	25	75	100	3
III	17UZY202	Core Major Paper –II Chordata	5	3	25	75	100	4
	17UZY203	Major Practical – I (Non-Chordata & Chordata)	2	3	40	60	100	4
	17UZY2A2	Allied Botany Paper –II: Applied Zoology	6	3	25	75	100	4
	17UZY2A3	Allied Botany Practical-(Paper I &II)	2	3	40	60	100	2
IV	17EVS201	Environmental Studies	2	2	-	50	50	2
	17HEC202	HE – Family values SKY Yoga practice -II	1	2	25	25	50	1
V	17 UNS401/ 17UNC 402/ 17 USG 403	NSS NCC Sports & Games						

	700							23
	Semester III							
I	17UTL303	Tamil/ Hindi Paper - III	5	3	25	75	100	3
II	17UEN303	English Paper – III	6	3	25	75	100	3
III	17UZY304	Core Major Paper –IV Cell Biology	7	3	25	75	100	4
		Major Practical – II Cell biology & Genetics	2	3	-	-	-	-
	17UZY3A4	Allied Chemistry Paper – I	6	3	25	75	100	4
		Allied Chemistry Practical	2	-	-	-	-	-
IV	17UZY3N1/ 17UZY3N2	Public health and hygiene (NME) / Ornamental fish culture (NME) / Basic Tamil paper/ AD Tamil paper	1	2	-	50	50	2
	17HEC303	HE – (Professional values & SKY Yoga practice -III)	1	3	25	25	50	1
V	17 UNC401/ 17UNS 402/ 17 USG 403	NSS NCC Sports & Games						
	500							17
	Semester IV							
I	17UTL404	Tamil/ Hindi Paper - IV	5	3	25	75	100	3
II	17UEN404	English Paper – IV	6	3	25	75	100	3
III	17UZY405	Core Major Paper –V Genetics	7	3	25	75	100	4
	17UZY406	Major Practical – II Cell biology & Genetics	2	3	40	60	100	4
	17UZY4A5	Allied Chemistry Paper – II	6	3	25	75	100	4
	17UZY4A6	Allied Chemistry Practical	2	3	40	60	100	2
IV	17UZY4N3/ 17UZY4N4	Food and nutrition (NME) / Biopharmaceuticals (NME) /Basic Tamil paper/AD Tamil paper	1	2	-	50	50	2
	17HEC404	HE – (Social values & SKY Yoga practice -IV)	1	2	25	25	50	1
V	17 UNC401/ 17UNS 402/ 17 USG 403	NCC NSS Sports & Games				50	50	1

	750							24
	Semester V							
III	17UZY507	Core Major Paper – VII Developmental Biology & Endocrinology	5	3	25	75	100	4
	17UZY508	Core Major Paper – VIII Biotechnology	5	3	25	75	100	4
	17UZY509	Core Major Paper – IX Biostatistics& Biophysics	5	3	25	75	100	4
	17UZY617	Major Practical – III Major Practical – III Developmental biology & Endocrinology, Biostatistics& Biophysics, Animal Physiology &Biochemistry and MLT	2	-	-	-	-	-
	17UZY618	Major Practical – IV Ecology, Evolution, Biotechnology, Microbiology Sericulture and Aquaculture	2	-	-	-	-	-
	17UZY510	Core Elective Paper I Medical Laboratory Technique	4	3	25	75	100	5
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	17GKL501	General Knowledge & General Awareness (SBE)	SS	2	-	50	50	2
	17HEC505	HE – (National values & SKY Yoga practice -V)	1	2	25	25	50	1
	650							25
	Semester VI							
III	17UZY612	Core Major Paper – XII Animal Physiology & Biochemistry	5	3	25	75	100	5
	17UZY613	Core Major Paper – XIII Ecology & Evolution	5	3	25	75	100	4
	17UZY614	Core Major Paper – XIV Microbiology & Immunology	5	3	25	75	100	4

	17UZY615	Core Major Paper – XV Sericulture	4	3	25	75	100	3
	17UZY616	Core Elective - III: Aqua culture	5	3	25	75	100	5
	17UZY617	Major Practical – III Developmental biology & Endocrinology, Biostatistics & Biophysics, Animal Physiology & Biochemistry and MLT	2	3	40	60	100	4
	17UZY618	Major Practical – IV Ecology, Evolution, Biotechnology, Microbiology Sericulture and Aquaculture	2	3	40	60	100	4
IV	17UZY6S3/ 17UZY6S4	Vermiculture (SBE)	1	2	-	50	50	2
		Poultry science and management technology (SBE)						
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							800	34
		**Grand total					3900	140

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Hrs/Week :	2	Credit:4
Objectives	➤ To obtain practical knowledge in ecology, evolution, biotechnology, microbiology, sericulture,aquaculture ➤ To study the physico-chemical nature of environment	

Components –

1. **Experiments** ----- 2X 10 = 20
2. **Spotters**----- 4X5 = 20
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Total ----- = 60

Content
EXPERIMENTS • Estimation of dissolved oxygen in water samples. • Estimation of carbondioxide • Determination of primary productivity • Estimation of salinity in water samples • Determination of pH in water samples • Culture medium preparation (Demonstration only) • Milk Methylene Blue Test • Hanging drop preparation • Morphology and morphometric measurements of fish by using model. • Water quality analyzer (Demonstration only) SPOTTERS Ecology and Evolution • Sacculina on Crab • Albunea • Hippa • Anguilla • Coccyx • Fossil • Peppered moth • Vermiform appendix Biotechnology/ Microbiology • E-Coli • Plasmids • Biodiesel Plant – Jatropha • PCR • Micropipette • Magnetic stirrer • Laminar Air Flow • Gel Electrophoresis Sericulture • Silkworm

• Cocoon • Mulberry shoot • Mulberry leaf • Netrika/chandrika • Leaf Mosaic disease • Leaf Blight disease Aquaculture • Common Carp • Gill net • Hook • Fish parasite – Argulus • Chinese dip net • Edible Oyster • Pearl oyster – <i>Pinctada vulgaris</i>	
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
			Spotters	20
	Model Practical Examination	20	Field visit /Micro-environmental study/ report preparation	10
	Record work	10	Record	10
	Total Marks	40	Total Marks	60

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	18HEC404	HE – (Social values & SKY Yoga practice -IV)	1	2	25	25	50	1
V	18UNC401/ 18UNS 402/ 18 USG 403	NCC NSS Sports & Games				50	50	1
							750	24

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	18UZY617	Major Practical – III Developmental biology & Endocrinology, Biostatistics & Biophysics, Animal Physiology & Biochemistry and MLT	2	3	40	60	100	4

	18UZY618	Major Practical – IV Ecology, Evolution, Biotechnology, Microbiology Sericulture and Aquaculture	2	3	40	60	100	4
IV	18UZY6S3/ 18UZY6S4	Vermiculture (SBE)	1	2	-	50	50	2
		Poultry science and management technology (SBE)						
	18HEC606	HE – (Global value s& SKY Yoga practice -VI)	1	3	25	25	50	1
							800	32
		**Grand total					3900	140


Head of the Department

Dr. S. SOMASUNDARAM M.Sc., Ph.D.,
Assistant Professor and head
Department of Zoology
Nallamuthu Gounder Mahalingam College
Pollachi - 642 001.


Principal

Dr. R. MANICKA CHEZIAN M.Sc., M.S., Ph.D.,
PRINCIPAL i/c
Nallamuthu Gounder Mahalingam College
Pollachi - 642 001, Coimbatore District.

Programme code:	B. Sc	Programme Title :	Zoology	
Course Code:	18UZY618	Title	Batch :	2018-2021
		MAJOR ZOOLOGY PRACTICAL – IV (Ecology, Evolution, Biotechnology, Microbiology Sericulture and Aquaculture)	Semester	V & VI
Hrs/Week:	2		Credits:	4

Course Objective

- To obtain practical knowledge in ecology, evolution, biotechnology, microbiology, sericulture, aquaculture
- To study the physico-chemical nature of environment

Course Outcomes (CO)

K3	CO1	To recollect the knowledge on Ecology, Evolution, Biotechnology, Microbiology, Sericulture and Aquaculture
K4	CO2	To understand the estimation of different water quality parameters, microbial culture and morphometric measurement of fish.
K5	CO3	To access the micro environment and report preparation.

Content

EXPERIMENTS

- Estimation of dissolved oxygen in water samples.
- Estimation of carbondioxide
- Determination of primary productivity
- Estimation of salinity in water samples
- Determination of pH in water samples
- Culture medium preparation (Demonstration only)
- Milk Methylene Blue Test
- Hanging drop preparation
- Morphology and morphometric measurements of fish by using model.
- Water quality analyzer (Demonstration only)

SPOTTERS

Ecology and Evolution

- Sacculina on Crab
- Albunea
- Hippa
- Anguilla
- Coccyx
- Fossil
- Peppered moth
- Vermiform appendix

Biotechnology/ Microbiology

- E-Coli
- Plasmids
- Biodiesel Plant – Jatropha
- PCR
- Micropipette
- Magnetic stirrer

• Laminar Air Flow • Gel Electrophoresis Sericulture • Silkworm • Cocoon • Mulberry shoot • Mulberry leaf • Netrika/chandrika • Leaf Mosaic disease • Leaf Blight disease Aquaculture • Common Carp • Gill net • Hook • Fish parasite – Argulus • Chinese dip net • Edible Oyster • Pearl oyster – <i>Pinctada vulgaris</i>	
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
			Spotters	20
	Model Practical Examination	20	Field visit /Micro-environmental study/ report preparation	10
	Record work	10	Record	10
	Total Marks	40	Total Marks	60

Hands on experience in practicals, Activity,

Books for Reference:

1. Ganga , G and Sulochana chetty,(1999). An introduction to sericulture. Oxford and IBH Publishing company Pvt. Ltd. New Delhi
2. Jayasurya, (2016). Economic Zoology. Saras publication. Nagarcoil, Kanyakumari Dist. Tamil Nadu
3. Kumaresan. V (2016) Biotechnology. Saras publication. Nagarcoil, Kanyakumari Dist. Tamil Nadu
4. Odum, E. P (1971) Fundamentals of ecology W.B. Sanders Company, London
5. Arumugam, N. (2016) Aquaculture SARAS Publications, Nagercoil, Tamilnadu.
6. ICAR Publication (2006) 1st edition. Hand book of fisheries and aquaculture, Directorate of information and publicatios of agriculture. Indian Council of Agricultural Research, New Delhi

Mapping

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


Head of the Department

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PRINCIPAL i/c
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Nallamuthu Gounder Mahalingam College - Curriculum Development Cell
B. Sc. Zoology Scheme of Examination For (2019 – 2022Batch),
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	19UTL101	Tamil/Hindi Paper – I	6	3	25	75	100	3
II	19UEN101	English Paper – I	5	3	25	75	100	3
III	19UZY101	Core Major Paper –I Non-Chordata	7	3	25	75	100	4
		Major Practical – I (Non-Semester Pattern) Non-Chordata & Chordata	2	-	-	-	-	-
	19UBY1A1	Ancillary Zoology Paper–I Non-Chordata & Chordata	6	3	25	75	100	4
		Ancillary Zoology Practical (Paper–I &II)	2	-	-	-	-	-
IV	19UHR101	Human Rights	1	2	-	50	50	2
	19HEC101	HE – (Personal values & SKY Yoga practice -I)	1	2	25	25	50	1
V		Extension activities (See Annexure –I)						
							500	17
	Semester II							
I	19UTL202	Tamil/ Hindi Paper – II	6	3	25	75	100	3
II	19UEN202	English Paper – II	5	3	25	75	100	3
III	19UZY202	Core Major Paper –II Chordata	6	3	25	75	100	4
	19UZY203	Major Practical – I (Non-Semester Pattern) Non-Chordata & Chordata	2	3	40	60	100	4
	19UBY2A2	Ancillary Zoology Paper –II Economic Zoology	6	3	25	75	100	4
	19UBY2A3	Ancillary Zoology Practical (Non-Semester Pattern) Paper I & II	2	3	40	60	100	2
	19EVS201	Environmental Studies (EVS)	2	2	-	50	50	2

IV	19HEC202	HE – Family values SKY Yoga practice –II	1	2	25	25	50	1
V		Extension activities (See Annexure –I)						
							700	23
	Semester III							
I	19UTL303	Tamil/ Hindi Paper – III	5	3	25	75	100	3
II	19UEN303	English Paper – III	6	3	25	75	100	3
III	19UZY304	Core Major Paper –IV Cell Biology	7	3	25	75	100	4
		Major Practical – II (Non-Semester Pattern) Cell biology & Genetics	2	3	-	-	-	-
	19UZY3A4	Ancillary Chemistry Paper – I	6	3	25	75	100	4
		Ancillary Chemistry Practical	2	-	-	-	-	-
IV	19UZY3N1/ 19UZY3N2	Non-Major Elective (NME) Public health and hygiene/ Ornamental fish culture/ Basic Tamil paper/ AD Tamil paper	1	2	-	50	50	2
	19HEC303	HE – (Professional values & SKY Yoga practice -III)	1	2	25	25	50	1
V		Extension activities (See Annexure –I)						
							500	17
	Semester IV							
I	19UTL404	Tamil/ Hindi Paper – IV	5	3	25	75	100	3
II	19UEN404	English Paper – IV	6	3	25	75	100	3
III	19UZY405	Core Major Paper –V Genetics	7	3	25	75	100	4
	19UZY406	Major Practical – II (Non-Semester Pattern) Cell biology & Genetics	2	3	40	60	100	4
	19UZY4A5	Ancillary Chemistry Paper – II	6	3	25	75	100	4
	19UZY4A6	Ancillary Chemistry Practical	2	3	40	60	100	2
IV	19UZY4N3 /19UZY4N 4	Non-Major Elective (NME) Food and nutrition/ Apiculture / Basic Tamil paper/AD Tamil paper	1	2	-	50	50	2
	19HEC404	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	19UZY507	Core Major Paper – VII Developmental Biology	5	3	25	75	100	4
	19UZY508	Core Major Paper – VIII Biotechnology	5	3	25	75	100	4
	19UZY509	Core Major Paper – IX Biostatistics & Biophysics	5	3	25	75	100	4
	19UZY510	Core Major Paper – X Bioinformatics and Biochemistry	5	3	25	75	100	5
	19UZY5E1/ 19UZY5E2	Core Elective Paper – I & II Medical Laboratory Technique / Poultry Science And Management Technology	4	3	25	75	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	19UZY5S1/ 19UZY5S2	Skill Based Elective (SBE)–Online Network and Information Security Cyber security – Ethical Hacking	1	2	-	50	50	2
	19GKL501	Skill Based Elective (SBE)–Online General Knowledge & General Awareness	SS	2	-	50	50	2
	19HEC505	HE – (National values & SKY Yoga practice -V)	1	2	25	25	50	1
							650	27
	Semester VI							
III	19UZY611	Core Major Paper – XI Animal Physiology & Endocrinology	5	3	25	75	100	5
	19UZY612	Core Major Paper – XII Ecology & Evolution	5	3	25	75	100	4
	19UZY613	Core Major Paper – XIII Microbiology & Immunology	5	3	25	75	100	4
	19UZY6E3/ 19UZY6E4	Core Elective Paper-III & IV Sericulture/ Insect Pest Management	4	3	25	75	100	3
	19UZY6E5/ 19UZY6E6	Core Elective Paper – V & VI Aquaculture/ Dairy farming and management Technology	5	3	25	75	100	5
	19UZY614	Major Practical – III	2	3	40	60	100	4

		(Non-Semester Pattern) Developmental Biology, Animal Physiology & Endocrinology, Biostatistics & Biophysics, Bioinformatics & Biochemistry & MLT						
	19 UZY615	Major Practical – IV (Non-Semester Pattern) Ecology, Evolution, Biotechnology, Microbiology, Sericulture and Aquaculture	2	3	40	60	100	4
IV	19 UZY6S3	Skill Based Elective (SBE) Vermiculture	1	2	-	50	50	2
	19 UZY6S4	Skill Based Elective (SBE) Biopharmaceuticals						
	19 HEC606	HE – (Global values & SKY Yoga practice -VI)	1	3	25	25	50	1
							800	32
		**Grand total					3900	140


Head of the Department

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Principal :-

Dr. R. MANICKA CHEZIAN M.Sc., M.S., Ph.D.,
PRINCIPAL i/c
Nallamuthu Gounder Mahalingam College
Pollachi - 642 001, Coimbatore District.

Programme code:	B. Sc	Programme Title :	Zoology	
Course Code:	19UZY615	Title	Batch :	2019-2022
		MAJOR ZOOLOGY PRACTICAL - IV (Ecology, Evolution, Biotechnology, Microbiology, Sericulture and Aquaculture)	Semester	V & VI
Hrs/Week:	2		Credits:	4

Course Objectives

- To obtain practical knowledge in ecology, evolution, biotechnology, microbiology, sericulture and aquaculture
- To study the physico-chemical nature of environment.
- To understand the different water quality analysis

Course Outcomes (CO)

K3	CO1	To recollect the knowledge on Ecology, Evolution, Biotechnology, Microbiology, Sericulture and Aquaculture
K4	CO2	To understand the estimation of different water quality parameters, microbial culture and morphometric measurement of fish.
K5	CO3	To access the micro environment and report preparation.

Content

EXPERIMENTS

- Estimation of dissolved oxygen in water samples.
- Estimation of carbondioxide
- Determination of primary productivity
- Estimation of salinity in water samples
- Determination of pH in water samples
- Culture medium preparation (Demonstration only)
- Milk Methylene Blue Test
- Hanging drop preparation
- Morphology and morphometric measurements of fish by using model.
- Water quality analyzer (Demonstration only)

SPOTTERS

Ecology and Evolution

- Sacculina on Crab
- Albunea
- Hippa
- Anguilla
- Coccyx
- Fossil
- Peppered moth
- Vermiform appendix

Biotechnology/ Microbiology

- E-Coli
- Plasmids
- Biodiesel Plant – Jatropha
- PCR
- Micropipette

• Magnetic stirrer • Laminar Air Flow • Gel Electrophoresis Sericulture • Silkworm • Cocoon • Mulberry shoot • Mulberry leaf • Netrika/chandrika • Leaf Mosaic disease • Leaf Blight disease Aquaculture • Common Carp • Gill net • Hook • Fish parasite – Argulus • Chinese dip net • Edible Oyster • Pearl oyster – <i>Pinctada vulgaris</i>	
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
			Spotters	20
	Model Practical Examination	20	Field visit /Micro-environmental study/ report preparation	10
	Record work	10	Record	10
	Total Marks	40	Total Marks	60

Hands on experience in practicals, Activity,

Books for Reference:

1. Ganga, G and Sulochana chetty (1999). An introduction to sericulture. Oxford and IBH Publishing company Pvt. Ltd. New Delhi
2. Jayasurya, (2016). Economic Zoology. Saras publication. Nagarcoil, Kanyakumari Dist. Tamil Nadu
3. Kumaresan. V (2016) Biotechnology. Saras publication. Nagarcoil, Kanyakumari Dist. Tamil Nadu
4. Odum, E. P (1971) Fundamentals of ecology W.B. Sanders Company, London
5. Arumugam, N. (2016) Aquaculture SARAS Publications, Nagercoil, Tamilnadu.
6. ICAR Publication (2006) 1st edition. Hand book of fisheries and aquaculture, Directorate of information and publicatios of agriculture. Indian Council of Agricultural Research, New Delhi

Mapping

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


Head of the Department

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Pollachi - 642 001, Coimbatore District.

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


Head of the Department

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Principal

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PRINCIPAL i/c
Nallamuthu Gounder Mahalingam College
Pollachi - 642 001, Coimbatore District.

Programme code:	B. Sc	Programme Title :	Zoology	
Course Code:	20UZY615	Title	Batch :	2020-2023
		MAJOR ZOOLOGY PRACTICAL - IV (Ecology, Evolution, Biotechnology, Microbiology, Sericulture and Aquaculture)	Semester	V & VI
Hrs/Week:	2		Credits:	4

Course Objectives

- To obtain practical knowledge in ecology, evolution, biotechnology, microbiology
- To study the physico-chemical nature of environment.
- To understand the different water quality analysis
- To get the knowledge about silkworm rearing appliances
- To acquire knowledge of sericulture and aquaculture

Course Outcomes (CO)

K1	CO1	To recollect the knowledge on Ecology, Evolution,
K2	CO2	To understand the estimation of different water quality parameters, microbial culture and morphometric measurement of fish.
K3	CO3	To access the micro environment and report preparation.
K4	CO4	To acquire knowledge about sericulture and Aquaculture
K5	CO5	To understand the techniques of Biotechnology and Microbiology,

Content

EXPERIMENTS

- Estimation of dissolved oxygen in water samples.
- Estimation of carbondioxide
- Determination of primary productivity
- Estimation of salinity in water samples
- Determination of pH in water samples
- Culture medium preparation (Demonstration only)
- Milk Methylene Blue Test
- Hanging drop preparation
- Morphology and morphometric measurements of fish by using model.
- Water quality analyzer (Demonstration only)

SPOTTERS

Ecology and Evolution

- Albunea
- Hippa
- Anguilla
- Fossil
- Vermiform appendix
- Giraffe
- Lung fish

Biotechnology/ Microbiology

- E-Coli
- Plasmids

• Biodiesel Plant – Jatropha • PCR • Micropipette • Magnetic stirrer • Laminar Air Flow • Gel Electrophoresis Sericulture • Silkworm • Silk gland • Cocoon • Mulberry shoot • Mulberry leaf • Netrika/chandrika • Leaf Mosaic disease • Leaf Blight disease • Pebrine Aquaculture • Common Carp • Sucker fish • Live feed - Daphnia • Gill net • Hook • Fish parasite – Argulus • Chinese dip net • Edible Oyster • Pearl oyster – <i>Pinctada vulgaris</i> • Lerniasis	
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
			Spotters	20
	Model Practical Examination	20	Field visit /Micro-environmental study/ report preparation	10
	Record work	10	Record	10
	Total Marks	40	Total Marks	60

Hands on experience in practicals, Activity,

Books for Reference:

1. Ganga, G and Sulochana chetty (1999). An introduction to sericulture. Oxford and IBH Publishing company Pvt. Ltd. New Delhi
2. Jayasurya, (2016). Economic Zoology. Saras publication. Nagarcoil, Kanyakumari Dist. Tamil Nadu
3. Kumaresan. V (2016) Biotechnology. Saras publication. Nagarcoil, Kanyakumari Dist. Tamil Nadu
4. Odum, E. P (1971) Fundamentals of ecology W.B. Sanders Company, London

5. Arumugam, N. (2016) Aquaculture SARAS Publications, Nagercoil, Tamilnadu.
6. ICAR Publication (2006) 1st edition. Hand book of fisheries and aquaculture, Directorate of information and publicatiois of agriculture. Indian Council of Agricultural Research, New Delhi
7. Sinha.J., Chatterjee.A.K. and Chattopadhyay. P. (2011) Advanced practical Zoology. Books and Allied pvt. Limited , 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

H-High; M-Medium; L-Low


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