



**Minutes of the Board of Studies Meeting of the  
Department of Zoology held on 21.01.2020 at 9.00 am**



**Ref. No.: ZOOL/BOS/2019-20/14**

**Members of the Board of Studies**

**Dr. S. Mary Mettilda Bai**

Head, Department of Zoology  
Holy Cross College, Nagercoil.

**Chair person**

**Dr. S.P. Sevarkodiyone**

Associate Professor  
Department of Zoology  
Ayya Nadar Janaki Ammal College  
Sivakasi, Tamil Nadu.

**University Nominee**

**Dr. K. Sahayaraj**

Head and Associate Professor  
Department of Zoology  
St. Xavier's College (Autonomous)  
Palayamkottai, Tamil Nadu.

**Subject Expert**

**Dr. V. Robin Perinba Smith,**

Head and Associate Professor  
Department of Zoology  
Scott Christian College  
Nagercoil.

**Subject Expert**

**Dr. S. Mary Baptista Janet**

Associate Professor  
Department of Zoology  
St. Mary's College, Tuticorin  
Tamil Nadu

**Alumna**

**Dr. VN. Ariharan**

Chief Executive Officer  
Biomeitez Research and Development Pvt. Ltd.  
Nagercoil.

**Industrialist**

**Department Members**

Dr. F. Brisca Renuga  
Associate Professor

Dr. J. Vinoliya Josephine Mary  
Assistant Professor

Dr. A. Shyla Suganthi  
Assistant Professor

Dr. P.T. Arokya Glory  
Assistant Professor

Dr. Jeni Chandar Padua  
Assistant Professor

Dr. C. Josephine Priyatharshini  
Assistant Professor

Dr. A. Punitha  
Assistant Professor

Dr. X. Venci Candida  
Assistant Professor

Dr. S. Prakash Shoba  
Assistant Professor

Dr. C. Anitha  
Assistant Professor

The following members were absent for the meeting

Dr. S.P. Sevarkodiyone                      University Nominee

Dr. C. Josephine Priyatharshini              Internal Member

The 14<sup>th</sup> Board of Studies meeting in Zoology was held on 21.01.2020 in the Department staff room at 10 am. The meeting commenced with silent prayer. The Head of the Department Dr. S. Mary Mettilda Bai chaired the meeting and introduced all the board members with warm words of welcome and presented the agenda of the meeting.

**Agenda**

1. Prayer
2. Welcome by the Chairperson
3. Reading of the minutes of the previous meeting
4. Panel of Examiners for UG and PG
5. Restructuring / Revision of curriculum for UG with PEOs, POs, PSOs and COs.
6. Revision of syllabus for UG Semester I and II
7. Restructuring / Revision of curriculum for PG with PEOs, POs, PSOs and COs.
8. Revision of syllabus for PG Semester I and II
9. Classification of New Courses
10. Classification of courses as Employability / Entrepreneurship / Skill Development
11. Classification of courses as Local / National / Regional / Global
12. Classification of courses as Crosscutting Issues Gender Equity / Environment and Sustainability / Human Values / Professional Ethics
13. Question Paper pattern for internal and external examinations
14. Recommendation of books and journals for UG and PG
15. Conduct of UG and PG practical exam during the odd and even semester
16. Conduct of seminars / workshops in collaborations with Government Agents / Universities / NGOs.
17. Suggestion for innovative teaching and evaluation techniques for UG and PG
18. Discussion on coordination of teaching, research, extension and other activities of the department
19. Feedback and action taken
20. Next meeting of BoS
21. Any other.

**The following items in the agenda were discussed by the members of the Board:**

**Item 01/BoS20.01/03: Approval of the minutes of the previous meeting held on 4.2.2019:**

Dr. F. Brisca Renuga read the minutes of the 13<sup>th</sup> Board of Studies meeting and it was approved by the members

**Item 02/BoS20.01/04: Approval of the panel of examiners for UG, PG and M.Phil. Zoology** - The names and contact details of the examiners were presented for approval. It was recommended to approve the panel of the examiners after including the designation of examiners in places where it was not mentioned.

**Item 03/BoS20.01/05: Approval of the Restructuring / Revision of curriculum for UG with PEOs, POs, PSOs and Cos.**

The following corrections were made:

- In the 2<sup>nd</sup> objective of the B.Sc., the phrase 'by way of' was replaced by 'through'.

- As per the suggestions put forward by the board members to use text books from reputed publishers rather than texts of regional Publications, the text books were modified.

#### Programme Educational Objectives (PEOs)

PEO - 1	The graduates will apply appropriate theory and scientific knowledge to participate in activities that support humanity and economic development nationally and globally, developing as leaders in their fields of expertise.
PEO - 2	The graduates will pursue lifelong learning and continuous improvement of the knowledge and skills with the highest professional and ethical standards.
PEO - 3	The graduates will inculcate practical knowledge for developing professional empowerment and entrepreneurship and societal services.

#### Programme Outcomes (POs)

PO	Upon completion of B.Sc. Degree Programme, the graduates will be able to:
PO - 1	utilize scientific knowledge to pursue higher studies in the relevant field.
PO - 2	create innovative ideas to enhance entrepreneurial skills for economic independence.
PO - 3	face challenging competitive examinations that offer rewarding careers.
PO - 4	reflect upon green initiatives and take responsible steps to build a sustainable environment.
PO - 5	handle ethical issues with social responsibility.
PO - 6	communicate effectively and collaborate successfully with peers to become competent professionals.

#### Programme Specific Outcomes (PSOs)

PSO	Upon completion, B.Sc. Zoology graduates will be able to:	PO addressed
PSO - 1	gain knowledge on animal diversity and basic concepts of Taxonomy, Cell biology, Genetics, Physiology, Immunology, Microbiology, Biotechnology, Ecology, Evolution, Embryology and Applied Zoology.	PO - 1, 3
PSO - 2	perform experiments as per laboratory standards in the areas of Taxonomy, Physiology, Cell Biology, Genetics, Applied Zoology, Ecology and Toxicology, Biochemistry, Biophysics, Biostatistics, Biotechnology, Immunology, Microbiology and Evolution.	PO - 2, 3
PSO - 3	apply the biological method by formulating a hypothesis, gathering relevant data and analyzing the data to address the problem effectively.	PO - 4, 5
PSO - 4	plan their career goals and pursue higher studies in different Zoological disciplines and develop entrepreneurship skills by applying the knowledge gained from courses like Aquaculture, Sericulture, Apiculture, Poultry, Vermitechnology and Clinical Laboratory Technology.	PO - 2, 6

**Course Structure**  
**Distribution of Hours and Credits**

Course	Sem. I	Sem. II	Sem. III	Sem. IV	Sem. V	Sem. VI	Total	
							Hours	Credits
Part I -Language	6 (4)	6 (4)	6 (4)	6 (4)	-	-	24	16
Part II-English	6 (4)	6 (4)	6 (4)	6 (4)	-	-	24	16
<b>Part-III</b>								
Major Core - Theory	4 (4)	4 (4)	4 (4)	4 (4)	6 (6) + 6 (6) + 6 (5)	6 (6) + 6 (6) + 6 (5)	52	50
Major Core - Practical	2	2 (2)	2	2 (2)	2 + 2 + 2	2 (2) + 2 (2) + 2 (2)	20	10
Major Elective/ Project	-	-	4 (3)	4 (3)	4 (3)	4 (3)	16	12
Allied – Theory	4 (3)	4 (3)	4 (3)	4 (3)	-	-	16	12
Allied – Practical	2	2 (2)	2	2 (2)	-	-	8	4
<b>Part IV</b>								
Add on Course (Professional English)	2 (2)	2 (2)	2 (2)	2 (2)	-	-	8	8
NME (Non-Major Elective)	2 (2)	2 (2)	-	-	-	-	4	4
SEC (Skill Enhancement Course)	2 (2)	2 (2)	-	-	-	2 (2)	6	6
AEC (Ability Enhancement Course)	-	-	-	-	2 (2)	-	2	2
<b>Total</b>	<b>30 (21)</b>	<b>30 (25)</b>	<b>30 (20)</b>	<b>30 (24)</b>	<b>30 (22)</b>	<b>30 (28)</b>	<b>180</b>	<b>140</b>

Non-Academic Courses								
Part V								
*FC – I (Values for Life)	-	(1)					-	1
*FC – II (Personality Development)			-	(1)			-	1
*FC–III (Human Rights Education)					(1)		-	1
*FC –IV (Gender Equity Studies)						(1)	-	1
*SLP-Community Engagement Course		(1)	(1)				-	2
*SLP-Extension activity (RUN)			(1)	(1)			-	2
*STP - Clubs & Committees / NSS		(1)		(1)			-	2

Total number of Hours = 180

Total number of Compulsory Credits = 140+10

\* Mandatory Courses conducted outside the regular working hours.

Skill Development Programme (Mandatory Certificate Course - 60 hours) will be offered in the first year for all the students.

**Item 04/BoS20.01/06: Approval of the revision of syllabus for UG Semester I and II**

Semester	Course	Course code	Paper	Hours/week	Credits	
I	Part I	TL2011/ FL2011	Language: Tamil/French	6	3	
	Part II	GE2011	General English	6	3	
	Part III	ZC2011	Major Core I - Invertebrate Zoology		4	4
		ZC20P1	Major Practical I - Invertebrate Zoology		2	2
		CA2011	Allied I - Theory		4	4
		CA20P1	Allied I - Practical		2	-
	Part IV	AEC201	AECC – Ability Enhancement Compulsory Course: English Communication		2	2
		ZNM201	NMEC - Public Health and Hygiene		4	2
		VEC202	Foundation Course I – Values for Life		-	-
	Part V	SDP202	Skill Development Programme (SDP) –	-	-	

			Certificate Course		
		STP204	Student Training Programme (STP) – Clubs & Committees / NSS	-	-
II	Part I	TL2021/ FL2021	Language: Tamil/French	6	3
	Part II	GEZ202	General English	6	3
	Part III	ZC2021	Major Core II - Chordate Zoology	4	4
		ZC20P2	Major Practical II - Chordate Zoology	2	2
		CA2021	Allied I- Theory	4	4
		CA20P1	Allied I - Practical	2	2
	Part IV	AEC202	AECC – Ability Enhancement Compulsory Course: Environmental Studies	2	2
		ZNM202	NMEC - Common Ailments and Simple Remedies	4	2
		VEC202	Foundation Course I – Values for Life	-	1
	Part V	SDP202	Skill Development Programme (SDP) – Certificate Course	-	1
STP204		Student Training Programme (STP) – Clubs & Committees / NSS	-	-	
III	Part I	TL2031/ FL2031	Language: Tamil/French	6	3
	Part II	GEZ203	General English	6	3
	Part III	ZC2031	Major Core III - Cell Biology	4	4
		ZC2032	Major – Elective I	4	4
		ZC2033	(a) Biochemistry, Biophysics and Biostatistics/		
		ZC2034	(b) Bioinformatics/		
			(c) Bioinstrumentation		
		ZC20P3	Major Practical III (III Sem. Core & Elective)	2	2
	Part IV	BA2031	Allied II - Theory	4	4
		BA20P1	Allied II - Practical	2	-
		SEC203/ SEC204	Skill Enhancement Course (SEC): Yoga / Computer Literacy	2	2
Part V	VEC204	Foundation Course II – Personality Development	-	-	
	STP204	Student Training Programme (STP) – Clubs & Committees / NSS	-	-	
	SLP203	Service-Learning Programme (SLP): Extension Activity (RUN)	-	1	
IV	Part I	TL2041/ FL2041	Language: Tamil/French	6	3
	Part II	GE2041	General English	6	3
	Part III	ZC2041	Major Core IV - Genetics	4	4
			Major – Elective II	4	4

		ZC2042 ZC2043 ZC2044	(a) Clinical Laboratory Technology/ (b) Animal Care & Services/ (c) Entomology		
		ZC20P4	Major Practical IV (IV Sem. Core & Elective)	2	2
		BA2041	Allied II - Theory	4	4
		BA20P1	Allied II - Practical	2	2
	Part IV	SEC203/ SEC204	Skill Enhancement Course (SEC): Yoga / Computer Literacy	2	2
		VEC204	Foundation Course II – Personality Development	-	1
	Part V	STP204	Student Training Programme (STP) – Clubs & Committees / NSS	-	1
V	Part III	ZC2051	Major Core V - Physiology	6	5
		ZC2052	Major Core VI – Biotechnology	6	5
		ZC2053	Major Core VII - Ecology and Toxicology	5	5
		ZC2054 ZC2055 ZC2056	Major – Elective III (a) Economic Zoology/ (b) Sericulture/ (c) Apiculture	5	4
		ZC20P5	Major Practical V (Physiology & Biotechnology)	4	2
		ZC20P6	Major Practical VI (Ecology and Toxicology & Organic Evolution)	2	-
		ZC20P6	Major Practical VI (Ecology and Toxicology & Organic Evolution)	2	-
	Part IV	ZSE205 HRE205	* SEC - Vermitechnology Foundation Course III - Human Rights Education (HRE)	2 -	2 1
VI	Part III	ZC2061	Major Core VIII - Developmental Zoology	6	5
		ZC2062	Major Core IX - Immunology and Microbiology	6	5
		ZC2063	Major Core X - Organic Evolution	5	5
		ZC2064 ZC2065 ZC2066	Major – Elective IV (a) Aquaculture/ (b) Poultry Science/ (c) Forensic Biology	5	4
		ZC20P6	Major Practical VI (Ecology and Toxicology & Organic Evolution)	2	2
		ZC20P7	Major Practical VII (Developmental Zoology & Immunology and Microbiology)	4	2
		ZC20P7	Major Practical VII (Developmental Zoology & Immunology and Microbiology)	4	2
	Part IV	ZSE206 WSC206	* SEC - Project Foundation Course IV - Women's Studies (WS)	2 -	2 1
<b>TOTAL</b>				<b>180</b>	<b>140+3</b>



**Self-Learning Courses (Extra Credit Courses)**

Semester	Course code	Title of the paper	Credits
III / V	ZC20S1	Ornamental Fish Culture	2
IV / VI	ZC20S2	Nutrition and Dietetics	2
	ZC20S3	Online Course (MOOC)	2

**Value-Added Courses (No credits, only Certificates)**

S. No.	Course code	Name of the course	Total hours
I	VAZ201	First Aid	30
II	VAZ202	Household Waste Management	30

The Board recommended and approved the syllabus of I and II semester of B.Sc. Zoology.

- The BOS members discussed on the curriculum structure and enquired whether the curriculum structure followed as per TANSCHÉ and UGC guidelines. MOOC course, credits for the MOOC course, number of students registered for self-learning course were discussed and they asked whether it was mandatory for the students to opt for these courses. The chairman of the Board clarified on the guidelines of the curriculum structure followed and the regulations followed for self-learning including MOOC course.
- Each credit should be allotted 15 - 18 theory hours was suggested by one of the board members. It was decided to make necessary corrections in the respective syllabi after consultation with the Academic Deans.
- The chairman informed the changes made in the curriculum with respect to Core and Elective courses.
  1. The elective course "Biochemistry and Biophysics" of III semester and "Biostatistics and Computer applications" of IV Semester of 2017 Board was combined into a single elective as "Biochemistry, Biophysics and Biostatistics" since the student study "Computer Literacy" as Skill Enhancement Course in the same academic year.
  2. The II elective course "Clinical Laboratory Technology" in III semester was shifted to IV semester as the first elective course.
  3. "Bioinformatics" which was the II elective of IV semester was shifted to III Semester.
  4. "Animal Care & Services" and "Entomology" courses were newly introduced in the IV semester as II and III electives.
  5. The III elective course "Apiculture" of IV semester was shifted to V semester.
  6. The I elective of VI semester "Applied Zoology" was renamed as "Economic Zoology" and interchanged with "Aquaculture" of V semester.
  7. The III elective course "Marine Biology" was removed as the student study Ecology and Aquaculture.

8. The III elective course of VI semester "Pest Management" was removed and replaced with

"Entomology" as newly introduced course in the IV semester.

9. "Forensic Biology" was newly introduced in the VI semester as III elective course.

10. Major practical III & IV will be according to the elective opted by the students.

**Item 05/BoS20.01/07: Approval of Restructuring / Revision of curriculum for PG with PEOs, POs, PSOs and COs.:** The BoS members approved the POs, PSOs and COs after discussion for the Courses in Semester I and Semester II - PG programme.

#### Programme Educational Objectives (PEOs)

PEO - 1	The graduates will apply appropriate theory and scientific knowledge to participate in activities that support humanity and economic development nationally and globally, developing as leaders in their fields of expertise.
PEO - 2	The graduates will pursue lifelong learning and continuous improvement of the knowledge and skills with the highest professional and ethical standards.
PEO - 3	The graduates will inculcate practical knowledge for developing professional empowerment and entrepreneurship and societal services.

#### PROGRAMME OUTCOMES (PO's)

PO	Upon completion of M.Sc. Zoology Degree Programme, the graduates will be able to:
PO - 1	carry out internship programmes and research projects to develop scientific skills and innovative ideas.
PO - 2	analyze complex problems, think independently, formulate, and perform quality research.
PO - 3	develop a multidisciplinary perspective and contribute to the knowledge capital of the globe.
PO - 4	emerge as expressive, ethical, and responsive citizens with proven expertise.
PO - 5	utilize the obtained scientific knowledge to create eco- friendly environment.

#### PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO	Upon completion of M.Sc. Degree Programme, the graduates will be able to:	PO addressed
PSO - 1	explain the various aspects of life sciences including Biochemistry, Cell and Molecular Biology, Biosystematics, Genetics, Evolution, Physiology, Developmental Biology, Ecobiology, Immunology, Microbiology, Endocrinology, Bioinformatics, Biotechnology and Nanobiology.	PO - 1, 3, 5

PSO - 2	carry out experimental techniques and methods of statistical analysis appropriate for their course.	PO - 2, 4
PSO - 3	develop personal and key transferable skills and entrepreneurial skills.	PO - 2, 4
PSO - 4	independently assemble facts, summarize and draw conclusions from scientific text and develop competence in the design and execution of research.	PO - 1, 2, 4

The overall structure of the curriculum framed in the 13<sup>th</sup> board with the addition of one more core paper in each semester was placed before the board for approval.

Semester	Course Code	Title of the paper	Hours/ week	Credits	
<b>I</b>	PZ2011	Core I - Biochemistry	6	4	
	PZ2012	Core II - Ecobiology	6	4	
	PZ2013	Core III - Structure and Function of Invertebrates	5	3	
	PZ2014	Core IV - Comparative Anatomy of Chordates	5	3	
	PZ2015 PZ2016	Elective I - (a) Animal Husbandry/ (b) Health Care	4	3	
	PZ20P1	Practical I - Biochemistry & Ecobiology	4	4	
<b>II</b>	PZ2021	Core V - Biostatistics, Computer Applications and Bioinformatics	6	4	
	PZ2022	Core VI - Cell and Molecular Biology	6	4	
	PZ2023	Core VII - Developmental Biology	5	3	
	PZ2024	Core VIII - Research Methodology	5	3	
	PZ2025 PZ2026	Elective II - (a) Animal Behaviour & Chronobiology/ (b) Bioinformatics	4	3	
	PZ20P2	Practical II - Biostatistics, Computer Applications and Bioinformatics & Cell and Molecular Biology	4	4	
	LST202	Life Skill Training (LST) I	-	1	
	PZ2032	Core X - Genetics and Evolution	6	4	
	PZ2033	Core XI - Culture and Capture Fisheries	5	4	
	PZ2034 PZ2035	Elective III - (a) General Endocrinology / (b) Forensic Biology	4	3	
	PZ20P3	Practical III Physiology & Genetics and Evolution	4	4	
	PZ20PR	*Project	5	3	

IV	PZ2041	Core XII - Microbiology	6	4
	PZ2042	Core XIII - Biotechnology and Nanobiology	6	4
	PZ2043	Core IVX - Immunology	5	4
	PZ2044	Core XV - Medical Laboratory Technology	5	4
	PZ2045	Elective IV - (a) Parasitology/	4	3
	PZ2046	(b) Applied Entomology		
	PZ20P4	Practical IV - Microbiology & Biotechnology and	4	4
	LST204	Life Skill Training (LST) II	-	1
Vacation	STP201	Summer Training Programme/ Internship	-	1
<b>TOTAL</b>			<b>120</b>	<b>90</b>

\*Subject based group project (2 students per group) with an individual viva voce during the III semester.

**Self-Learning Courses (Extra Credit Courses)**

Semester	Course code	Title of the paper	Credits
I/ III	PZ17S1	Life Science for Competitive Examinations/ Online Course (MOOC)	2
II/ IV	PZ17S2	Environmental Impact Assessment and Audit/ Online Course (MOOC)	2

**Value-Added Courses**

S. No.	Course code	Name of the course	Total hours
I	VACPZ1	Techniques in Biology	30

**Item 06/BoS20.01/08: Approval of the revised syllabus for PG Semester I and II:** The chairperson presented the changes in the curriculum and she also said that the modifications were based on the feedback from stakeholders. The changes in the PG curriculum (Annexure 6) are:

- 'Structure and Function of Invertebrates', 'Comparative Anatomy of Chordates', 'Medical Laboratory Technology' are newly introduced as core papers III, IV and XV respectively in I and IV semester.
- The Course "Culture and Capture Fisheries" is shifted from I semester to III semester.
- Important topics of 'Biosystematics' are incorporated in the course 'Structure and Function of Invertebrates' and 'Biodiversity' is incorporated in Ecobiology.
- Core course "Cell and Molecular Biology" is shifted from I semester to II semester.
- Core course "Ecobiology" is shifted from IV semester to I semester.
- Core course "Genetics & Evolution" is shifted from II semester to III semester.
- Core course "Immunology" is shifted from III semester to IV semester.
- The Elective paper- I b, Cell Technology from the I semester is replaced with III

Semester Elective – III b Health care.

- “Animal Husbandry”, “Animal Behaviour & Chronobiology”, “Forensic Biology” are introduced newly as Elective I a, Elective II a & Elective III b respectively.
- Medical Entomology is changed into Applied Entomology and the syllabus should be changed accordingly.
  - Self-Learning courses ‘Life Science for Competitive Examinations I & II’ are coupled together as one course ‘Life Science for Competitive Examinations’ and a new self-learning course ‘Environmental Impact Assessment and Audit’ is introduced.

The board enquired about the number of seminar hours per semester and said that the library hour should be included in the time-table.

**The following correction was suggested to be carried out in the curriculum structure:**

- Under eligibility for admission, major-related papers can be replaced as allied papers.
- i. The following courses during I and II semesters are revised/ modified based on the feedback from the students and Alumni.

Semester	Paper Code	Paper Title	Changes	
			Removed (if any)	Addition (if any)
I	PZ2011	Core I - Biochemistry	-	Unit I: Scope
	PZ2012	Core II - Ecobiology	Unit III: The environment – physical factors, biotic factors and their interactions. Biological clock and biological rhythms. Unit IV: Natural Disaster Management: Floods, earthquakes, cyclones, landslides, Tsunami, Mitigation and Disaster Management; Urbanization - Possible advantages of urbanization – problems, solutions	Unit I: Environmental concepts – laws and limiting factors. The environment – physical factors, biotic factors and their interactions. Unit II: Concept of meta-population Unit III: Natural Disaster Management Unit IV: Biodiversity Unit V: OECD Test Guidelines for the Chemicals (420, 423), Urbanization, Environmental ethics, Central and State Pollution Control Boards Environmental auditing, Environmental impact assessment, Legislations for

				environmental Protection.
	PZ20P1	Practical I - Biochemistry & Ecobiology	Determination of pH of the given sample using pH paper and pH meter. Electrophoresis - SDS - PAGE (Demonstration).	To prepare buffers of known pH and Solutions of known molarity, normality, %, ppt, ppm. Preparation of Acid & Alkali solutions and acid-base titration applying Henderson-Hasselbalch' equation. To prepare buffers of known pH and molarity.
II	PZ2021	Core V - Biostatistics, Computer Applications and Bioinformatics	Unit IV: Computer memory and storage devices	Minitab, Sigmaplot, Originpro
	PZ2023	Core VII - Developmental Biology	Unit II: Gradient theory. Morphogenetic pattern and fields. Central nervous system. Unit IV: Infertility – causes and treatment, Assisted Reproductive Technology (ART), Family planning.	-
	PZ2024	Core VIII - Research Methodology	Unit I: Instrumentation, bright field, dark field, phase contrast, polarization Unit II: pH meter: principle – electrodes – applications. Unit III: paper, thin layer, column Unit IV: Spectrophotometer: principle, design and applications. Unit V: Research and discriminative reading, Index card, Alphabet	Unit III: SDS gel, Blotting techniques Unit V: Predatory journals, H-index and Citation index. Plagiarism shifted to last line

			number system, Online literature collection, Laboratory safety	
PZ2026	(b) Bioinformatics		Unit I: Basics of computer, search engines. Unit II: Structural databases, Database programs, DBGET Unit IV: Medical informatics, medical literature Unit V: Programming or bioinformatics, gateway interface	Completely revamped as given below Unit II shifted to unit I with the addition of Introduction – definition – application. Unit III shifted to unit II. Unit IV shifted to unit III Unit V shifted to Unit IV Unit I shifted to Unit V Added Central Dogma of molecular biology, Proteomics Data management analysis.
PZ20P2	Practical II - Biostatistics, Computer Applications and Bioinformatics & Cell and Molecular Biology		Blood smear (Human).	Estimation of population by Mark and Recapture method using beads. Visualizing protein structure using RasMol, Whole mount preparation of a specimen. Sectioning and staining of a tissue.

**Item 07/BoS20.01/09: Approval of new courses**

The Board approved the following new courses in the PG programme.

Course Code	Name of the Course
PZ2013	Core III - Structure and Function of Invertebrates
PZ2014	Core IV - Comparative Anatomy of Chordates
PZ2015	Elective I - (a): Animal Husbandry
PZ2016	Elective I - (b): Health Care
PZ2025	Elective II: (a) Animal Behaviour & Chronobiology
PZ20S2	Self-Learning Course: Environmental Impact Assessment and Audit

Item 08/BoS 20.01/10: Approval of courses that address Employability (EM) / Entrepreneurship (EN) / Skill Development (SD)

## UG

Semester	Course Code	Name of the Course	EM	EN	SD
I	ZC2011	Major Core I - Invertebrate Zoology	✓	✓	✓
	ZC20P1	Major Practical I - Invertebrate Zoology			✓
	ZNM201	NMEC - Public Health and Hygiene			✓
II	ZC2021	Major Core II – Chordate Zoology	✓		✓
	ZC20P2	Major Practical II - Chordate Zoology			✓
	ZNM202	NMEC - Common Ailments and Simple Remedies	✓		✓

## PG

Sem ester	Course Code	Name of the Course	EM	EN	SD
I	PZ2011	Core I - Biochemistry	✓		✓
	PZ2012	Core II - Ecobiology	✓		✓
	PZ2013	Core III - Structure and Function of Invertebrates	✓		✓
	PZ2014	Core IV - Comparative Anatomy of Chordates	✓		✓
	PZ2015	Elective I - (a) Animal Husbandry		✓	✓
	PZ2016	(b) Health Care			✓
II	PZ2021	Core V – Biostatistics, Computer Applications and Bioinformatics	✓		✓
	PZ2022	Core VI– Cell and Molecular Biology	✓		✓
	PZ2023	Core VII – Developmental Biology	✓		✓
	PZ2024	Core VIII - Research Methodology			✓
	PZ2025	Elective II - (a) Animal Behaviour & Chronobiology		✓	✓
	PZ2026	(b) Bioinformatics		✓	✓



**Item 09/BoS20.01/11: Approval of the courses classified under Local / National / Regional / Global relevance.**

UG						
Semester	Course Code	Name of the Course	Local	Regional	National	Global
I	ZC2011	Major Core I - Invertebrate Zoology	✓	✓	✓	✓
	ZC20P1	Major Practical I - Invertebrate Zoology	✓			
	ZNM201	NMEC - Public Health and Hygiene				✓
II	ZC2021	Major Core II – Chordate Zoology	✓	✓	✓	✓
	ZC20P2	Major Practical II - Chordate Zoology	✓			
	ZNM202	NMEC - Common Ailments and Simple Remedies	✓			✓

PG						
Semester	Course Code	Name of the Course	Local	Regional	National	Global
I	PZ2011	Core I – Biochemistry	✓	✓	✓	✓
	PZ2012	Core II - Ecobiology	✓	✓	✓	✓
	PZ2013	Core III - Structure and Function of Invertebrates	✓			✓
	PZ2014	Core IV - Comparative Anatomy of Chordates			✓	✓
	PZ2015	Elective II - (a) Animal Husbandry		✓		✓
	PZ2016	(b) Health Care	✓			
	PZ20P1	Practical I - Biochemistry & Ecobiology	✓	✓	✓	
II	PZ2021	Core V - Biostatistics, Computer Applications and Bioinformatics	✓	✓	✓	✓
	PZ2022	Core VI - Cell and Molecular Biology	✓	✓	✓	
	PZ2023	Core VII - Developmental Biology	✓	✓		✓
	PZ2024	Core VIII - Research Methodology	✓	✓	✓	✓

	PZ2025	Elective II - (a) Animal Behaviour & Chronobiology	✓		✓	
	PZ2026	(b) Bioinformatics				✓
	PZ20P2	Practical II - Biostatistics, Computer Applications and Bioinformatics & Cell and Molecular Biology	✓	✓	✓	✓
	LST202	Life Skill Training (LST) I	✓			

Item 10/BoS20.01/12: Approval of the courses classified based on cross cutting issues such as Gender equity (GE), Environmental sustainability (EVS), Human values (HV) and Professional Ethics (PE)

UG						
Semester	Course code	Paper	GE	EVS	HV	PE
I	ZC2011	Major Core I - Invertebrate Zoology		✓		-
	ZC20P1	Major Practical I - Invertebrate Zoology				-
	ZNM201	NMEC - Public Health and Hygiene	✓		✓	✓
II	ZC2021	Major Core II - Chordate Zoology		✓		-
	ZC20P2	Major Practical II- Chordate Zoology				-
	ZNM202	NMEC - Common Ailments and Simple Remedies	✓		✓	✓

PG						
Semester	Course code	Title of the paper	GE	EVS	HV	PE
I	PZ2011	Core I – Biochemistry			✓	✓
	PZ2012	Core II - Ecobiology		✓		
	PZ2013	Core III - Structure and Function of Invertebrates		✓		
	PZ2014	Core IV - comparative Anatomy of Chordates		✓		
	PZ2015 PZ2016	Elective II - (a) Animal Husbandry/ (b) Health Care	✓		✓	✓
II	PZ2021	Core V - Biostatistics, Computer Applications and Bioinformatics				✓
	PZ2022	Core VI - Cell and Molecular Biology			✓	
	PZ2023	Core VII - Developmental Biology	✓		✓	✓
	PZ2024	Core VIII - Research Methodology				✓

	PZ2025	Elective II - (a) Animal Behaviour & Chronobiology/		✓		
	PZ2026	(b) Bioinformatics				✓
	LST202	Life Skill Training (LST) I			✓	

**Item 11/BoS20.01/13: Approval of Examination pattern for internal and external examinations** - The Board decided to implement the internal and external assessments as follows:

**B.Sc:**

**For Theory Papers:** The ratio of Internal and External is 30 : 70.

**Components and Marks Distribution for Internal assessment are**

Periodic test i.e. Formative assessment (15 marks), 3 Class Test (6 marks), 2 quizzes (4 marks), Assignment / Field visit report/ Article review/ Group discussion/ Problem solving (5 marks).

**Question Pattern for External examinations (Major / Allied/ Elective / Non-Major Elective)**

Part A 10 x 1 = 10 marks (Two objective type questions from each unit without any choice)

Part B 5 x 4 = 20 marks (One question from each unit with internal choice. Among the five questions one should be of application type and another will be of analysis type).

Part C 5 x 8 = 40 marks (One question from each unit with internal choice. Question should cover all levels of Knowledge as per the Course Outcomes).

**For Practical Papers**

**I & II years Major Practical:** The ratio of Internal and External is 20 : 30 (total marks 50).

**Internal assessment components (20 marks):** Performance of the experiments in the regular practical hours (2.5 marks), Regularity in attending practical and submission of records (2.5 marks), Model exam (10 marks), Record (5 marks).

**External assessment (30 marks):** Major practical (10 marks), Minor practical (10 marks), Spotters (5 x 1½ = 7.5 marks), Record (2.5 marks).

**III year Major practical & Allied practical:** The ratio of Internal and External is 40 : 60 (total marks 100)

**Internal assessment components (40 marks):** Performance of the experiments in the regular practical hours (10 marks), Regularity in attending practical and submission of records (10 marks), Model exam (15 marks), Record (5 marks).

**External assessment (60 marks):** Major practical (25 marks), Minor practical (20 marks), Spotters (5 x 2 = 10 marks), Record (5 marks).

- The board enquired the reason for the reduction of 3 CIAs to 2 CIAs and about the time interval between two successive CIAs. The chairperson replied that it was due to the lack of interest shown among students in appearance of 3 CIA as only best two was taken.

- The subject experts and the alumnae felt that the portions were too heavy and asked whether it would be possible to complete the portions.

The internal members of the board said that it was possible to complete the portions and was also emphasized by the members that our syllabus should meet the standards of the University and help students to appear for competitive exams.

- The conduct of class assignment, seminars, article reviewing, etc during class hours was made clear.

## **M.Sc.**

### **For Theory Papers**

The ratio of Internal and External is 40 : 60.

#### **Components and Marks Distribution for Internal assessment are**

Periodic Test i.e. formative assessment (20 marks), Seminar (4 marks), 2 Class Test (4 marks), 2 Quiz (4 marks), Problem Solving / Article review/ Group Discussion (4 marks), Assignment (4 marks).

#### **Question Pattern for External examinations (Core / Elective)**

Part A  $10 \times 1 = 10$  marks (Two objective type questions from each unit without any choice)

Part B  $5 \times 3 = 15$  marks (One question from each unit with internal choice. Question should cover all levels of Knowledge as per the Course Outcomes).

Part C  $5 \times 7 = 35$  marks (One question from each unit with internal choice. Question should cover all levels of Knowledge as per the Course Outcomes).

### **For Practical Papers**

The ratio of Internal and External is 40 : 60 (total marks 100)

**Internal assessment components (40 marks):** Performance of the experiments in the regular practical hours (10 marks), Regularity in attending practical and submission of records (10 marks), Model exam (15 marks), Record (5 marks).

**External assessment (60 marks):** Major practical (25 marks), Minor practical (20 marks), Spotters ( $5 \times 2 = 10$  marks), Record (5 marks).

### **Project**

Report : 80 (Internal - 40 marks & External – 40 marks)

*Viva voce* : 20 (External only – individual – open *viva-voce*)

**Item 12/BoS 20.01/14:** Recommendation of books, journals for UG and PG.

- Text books should be quoted. E-sources (web link) may be included.
- All the reference books should be updated.
- Advisable to have reference books instead of edited books.
- Reference book should be cited in each Unit.

Recommended Books (Recent editions):

- (i) Ambika Shanmugam for Biochemistry
- (ii) Odum for Ecobiology
- (iii) Mathiazhan for Animal Husbandry.
- (iv) Gurumani for Biostatistics & Computer applications.
- (v) Rastogi for Biostatistics, Computer applications & Bioinformatics.
- (vi) Attwood, T.K. and Parry-Smith for Bioinformatics.
- (vii) Lodish and Berk for Cell and Molecular Biology.
- (viii) Cooper for Cell and Molecular Biology.
- (ix) Balinsky for Developmental Biology.
- (x) Veerakumari; Gurumani for Research Methodology.
- (xi) Mohan P. Arora for Animal Behaviour & Chronobiology.
- (xii) George Gaylord Simpson & Kapoor, V.C. for Biosystematics topics.

Reference book for Part IV - EVS written by Dr. Jeni Chandar Padua, Dr. S. Mary Mettilda Bai and Ms. Albino Wins was recommended for EVS, of I UG students in 2020.

The members suggested subscribing the National and International reputation Journals with impact factor for the department library.

**Item 13/BoS 20.01/15: Approval of conduct of UG/PG practical exam during the odd and even semester** - The board clarified on the conduct of practical every semester and asked whether all the faculty are willing for the same. Since it was accepted by the faculty, the board recommended to approve the conduct of practical every semester and suggested to have the open *Viva-voce* instead of closed *Viva-Voce* for the project.

**Item 14/BoS20.01/16: Approval of conduct of seminars / workshops in collaborations with Government Agents / Universities / NGOs.** - Suggestions on conducting seminars/workshops in collaboration with Universities/Industries/NGO/other organizations. Collaborative research can be done with Universities and St. Xavier's College.

**Item 15/BoS 20.01/17: Suggestions for innovative teaching and evaluation techniques.** The BoS members discussed the different methodologies adopted by the faculty to enhance the teaching, learning and evaluation, and suggested to maintain the records for the same.

**Item 16/BoS 20.01/18: Discussion on coordination of teaching, research, extension, and other activities of the department.** The board members enquired about the adoption of villages for extension activities. The internal board members explained the activities carried out in different villages under RUN programme and adoption of a Government School.

**Item 17/BoS 20.01/19: Approval of Feedback and action taken** - The Board approved the Curriculum Feedback on Curriculum 2017 Board

Stakeholders	Suggestion Given:	Action taken
Students	• Reduce the spotters in practical	Reduced
	• NME – topics like hearing aid, excreta disposal can be removed. • Update syllabus	Updated
Parents	• Skill oriented courses can be introduced • More skill-based short-term courses will be useful.	Introduced

**Students:** The students overall felt that few topics in Biophysics can be deleted and updated. In PG, Biochemistry was tough to learn. Likewise, for practical the numbers of spotters can be reduced.

1. Aswathy Gopika (III B.Sc., Zoology)

2. Lylathul Aseena, S.K. (II M.Sc. Zoology)



S.K. Lylathul Aseena.

**Item 18/BoS 20.01/20: Next Meeting of the BoS**

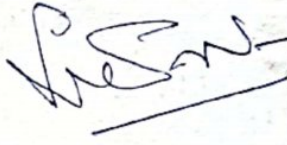
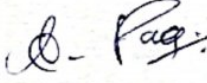

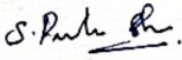
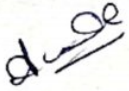
The members of the board suggested to conduct the next meeting of BoS in August 2<sup>nd</sup> week, 2020. The meeting ended with vote of thanks by the HoD, the Chairperson of the BoS at 3 pm.

**Item 19/BoS 20.01/21: Any other - Nil****Members**

Dr. S. Mary Mettilda Bai	- HoD and Chair person	<i>S. Mary Mettilda Bai</i> 21/1/2020
Dr. Dr. S.P. Sevarkodiyone	- University nominee	-
Dr. Dr. K. Sahayaraj	- Subject Expert	<i>K. Sahayaraj</i>
Dr. V. Robin Perinba Smith	- Subject Expert	<i>V. Robin Perinba Smith</i>
Dr. VN. Ariharan	- Industrialist	<i>VN. Ariharan</i> 21/01/2020
Dr. S. Mary Baptista Janet	- Alumni	<i>S. Mary Baptista Janet</i> 21/01/2020
Dr. F. Brisca Renuga	- Member	<i>F. Brisca Renuga</i> 21/10/2020
Dr. J. Vinoliya Josephine Mary	- Member	<i>J. Vinoliya Josephine Mary</i> 21/10/2020
Dr. A. Shyla Suganthi	- Member	<i>A. Shyla Suganthi</i>
Dr. P.T. Arockya Glory	- Member	<i>P.T. Arockya Glory</i>
Dr. Jeni Chandar Padua	- Member	<i>Jeni Chandar Padua</i>
Dr. C. Josephine Priyatharshini	- Member	-
Dr. A. Punitha	- Member	<i>A. Punitha</i>
Dr. X. Venci Candida	- Member	<i>X. Venci Candida</i>
Dr. S. Prakash Shoba	- Member	<i>S. Prakash Shoba</i>
Dr. C. Anitha	- Member	<i>C. Anitha</i>

Name of the Members	Designation	Signature
<b>Dr. S. Mary Mettilda Bai</b> Head, Department of Zoology Holy Cross College, Nagercoil	Chair person	<i>S. Mary Mettilda Bai</i> 20/1/2020
<b>Dr. S.P. Sevarkodiyone</b> Associate Professor, Department of Zoology Ayya Nadar Janaki Ammal College Sivakasi, Tamil Nadu.	University Nominee	Not attended
<b>Dr. K. Sahayaraj</b> Head and Associate Professor in Zoology St. Xavier's College (Autonomous), Palayamkottai, Tamil Nadu.	Subject Expert	<i>K. Sahayaraj</i> 21/01/2020
<b>Dr. V. Robin Perinba Smith,</b> Head and Associate Professor, Department of Zoology, Scott Christian College, Nagercoil.	Subject Expert	<i>V. Robin Perinba Smith</i>
<b>Dr. S. Mary Baptista Janet</b> Associate Professor, Department of Zoology St. Mary's College, Tuticorin Tamilnadu	Alumna	<i>S. Mary Baptista Janet</i> 21/01/2020
<b>Dr. VN. Ariharan</b> Chief Executive Officer Biomeitez Research and Development Pvt. Ltd. Nagercoil.	Industrialist	<i>VN. Ariharan</i> 21/01/2020
<b>Dr. F. Brisca Renuga</b> Associate Professor Department of Zoology Holy Cross College, Nagercoil	Member	<i>F. Brisca Renuga</i> 21-01-2020
<b>Dr. J. Vinoliya Josephine Mary</b> Assistant Professor Department of Zoology Holy Cross College, Nagercoil	Member	<i>J. Vinoliya Josephine Mary</i>
<b>Dr. A. Shyla Suganthi</b> Assistant Professor Department of Zoology Holy Cross College, Nagercoil	Member	<i>A. Shyla Suganthi</i>
<b>Dr. P.T. Arokya Glory</b> Assistant Professor Department of Zoology Holy Cross College, Nagercoil	Member	<i>P.T. Arokya Glory</i>



Dr. Jeni Chandar Padua Assistant Professor Department of Zoology Holy Cross College, Nagercoil	Member	
Dr. C. Josephine Priyatharshini Assistant Professor Department of Zoology Holy Cross College, Nagercoil	Member	Not attended
Dr. A. Punitha Assistant Professor Department of Zoology Holy Cross College, Nagercoil	Member	
Dr. X. Venci Candida Assistant Professor Department of Zoology Holy Cross College, Nagercoil	Member	
Dr. S. Prakash Shoba Assistant Professor Department of Zoology Holy Cross College, Nagercoil	Member	
Dr. C. Anitha Assistant Professor Department of Zoology Holy Cross College, Nagercoil	Member	

  
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